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## The First Mormon Temple, at Kirtland, Ohio

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DURING the time of the early settlement of Ohio, in the beginning of the nineteenth century, many religious sects of the New England States took advantage of the great quantity of cheap land available in the new country and made attempts, more or less successful, to plant settlements there. The presence of the Indians, who still remained in certain parts of the State, inspired some to missionary work. In the early days the French and the Moravians had attempted to establish missionary posts, but they were generally unsuccessful. Many New England churches attempted missions at various times and places. The Quakers, Shakers, Dunkards, Zoarites, Millerites, and many other peculiar sects established communities in this section of the Great Northwest. The most unique, ambitious, and in the end the most tragic of all these settlements inspired and fostered by religious ideas and beliefs was that of the Community of Latter-Day Saints at Kirtland, Ohio.

Here at Kirtland the religion as revealed by the so-called prophet, Joseph Smith, took form and made its first material growth. The culmination of their activities in the community was the building of a house of worship. Although there are in the world many temples, cathedrals, and churches of architectural and historical interest, yet of all these there is none more unique architecturally or more interesting historically than the "temple" which these Latter-Day Saints built in the little village of Kirtland, and which may be called the first Mormon temple. The structure is still standing in its pristine condition. Outside of its local community and the various branches of the sect it is little known. It stands in an isolated and secluded spot, yet on a hilltop, near Little

Mountain, the highest point in Ohio, and but a few miles from the city of Cleveland!

This community, with its temple, was the cradle of a religious sect that has had a turbulent and dramatic career, one which reads like a modern version of the rise of the Mo-

ammedans. The sect began with a prophet, a vision, a Book of Laws, inspired missionaries, and soon the building of their first temple at Kirtland.

The little town of Kirtland, with its silent temple, remains to this day almost deserted. Nearly a century ago, however, it was a busy and prosperous little city, a metropolis, the capital of a near-principality, the centre of a little kingdom, a state and church combined; with its own bank, its own laws, and its own religion! But its fortunes have changed, activities shifted, and the little town finds itself off the highways of progress, accessible only by means of a winding country road leading to the top of the temple-crowned hill.

With the history of the Mormons we have no immediate concern. The purpose of this article being wholly in the interest of the architecture of the Kirtland Temple, only such phases of their history and religion will be considered here as have a direct bearing upon the building of that unique structure. The inception of the church dates from 1827. A

young man, Joseph Smith, a native of Vermont, but at that time living in the vicinity of Palmyra, N. Y., is said to have had a "vision," by which he was directed to and found buried certain "brass plates" containing inscriptions.

The leader and so-called prophet, Joseph Smith, moved to Kirtland in 1831. With his coming the little town and community took on added inspiration. Religious enthusi-



Fig. 1. Aaronic pulpit in the first Mormon Temple, at Kirtland, Ohio.



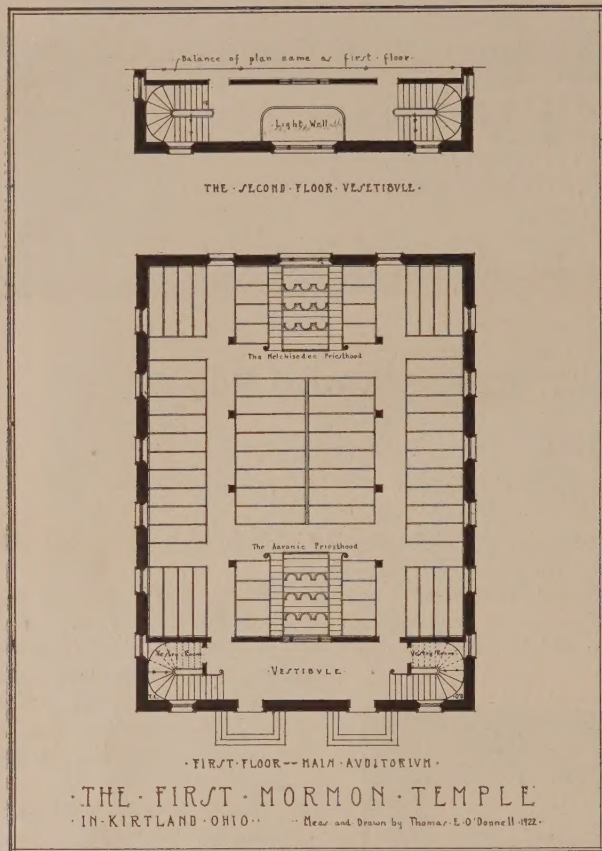


Fig. 2.

asm was at its height; miracles and revelations were looked for hourly. The prophet announced that in a vision he was "instructed by the Lord to build a house of worship called a temple," and that "a pattern of the building, with dimensions, was shown to me" (Fig. 2). Such was his power over his followers that the work of building the temple was begun immediately. On July 23, 1833, the corner-stone was laid, and the temple completed and dedicated on March 27, 1836, at an estimated cost of \$60,000.

As to how and to what extent architect, builder, and artisan contributed to make Smith's "vision" a reality, little is known. But, whatever his vision, he had to depend upon the usual craftsmen of a pioneer country to carry out his plans. The form, plan, and arrangement he could fix, but the matter of architectural detail seems to have been based largely upon the practice of the time. Considering the period, the inadequate facilities of the early settlers, and the lack of funds, it is remarkable that such an edifice should have been erected. Religious zeal and inspiration, no doubt, were largely responsible for the fine result.

Smith was, through his vision, no doubt, the designer and director of the work. His church was "organized after the ancient pattern as contained in the Bible," which accounts for many of its peculiarities. But as the Tabernacle was revealed in the terms and elements of the Hebrew architecture of the time, so it is not surprising to find Smith's temple resembling and having many of the characteristics of the Post-Colonial churches of his time (Fig. 3). Whether there were certain mechanics in direct charge of parts of the work is not recorded. To the architectural historian it is of special interest to note the evidences that the builders drew freely from past styles for their architectural details. There is a curious mixture of Gothic, Colonial, and Greek Revival

elements. The small windows in the front and rear and on the sides are Gothic in general form. The large central windows, the dormers, and cupola indicate Colonial lineage, while many of the interior details show a tendency toward the Greek Revival.

The walls are constructed in a very substantial manner of sandstone from a near-by quarry, opened for the purpose. They are two feet thick, of rough-quarried stones, carefully laid, covered with plaster on the outside, and finished with projecting quoins of dressed sandstone at the corners. There is a tradition to the effect that the women of the community gave all their glassware to be pounded up and mixed into the finish coat of the stucco on the walls, that their temple might have a "sparkling effect in the sunshine." There are many other interesting traditions coming down to us concerning the building of this temple. Like the building of the cathedrals in mediæval times, the building of the Kirtland temple was a community enterprise and animated, no doubt, by something of the same religious zeal and enthusiasm as were experienced in the Dark Ages. The followers of the prophet made many sacrifices and gave freely of their time—in the quarry preparing stone, in the surrounding forest cutting timber for construction, bringing materials to the site, and as workmen and artisans in the erection of the building—all working with an inspiration and with a spirit quite apart from the ways of the world.

As a whole the exterior of the temple is very simple. The finest decorative details are lavished upon the interior. With the exception of the exterior walls, the building is of wood construction, the floor, ceiling, and roof framing being of heavy wood timbers all mortised and pinned together. The cupola is entirely of wood construction, the lower portion being covered with matched boards in imitation of



Fig. 3. The first Mormon Temple as it stands to-day.



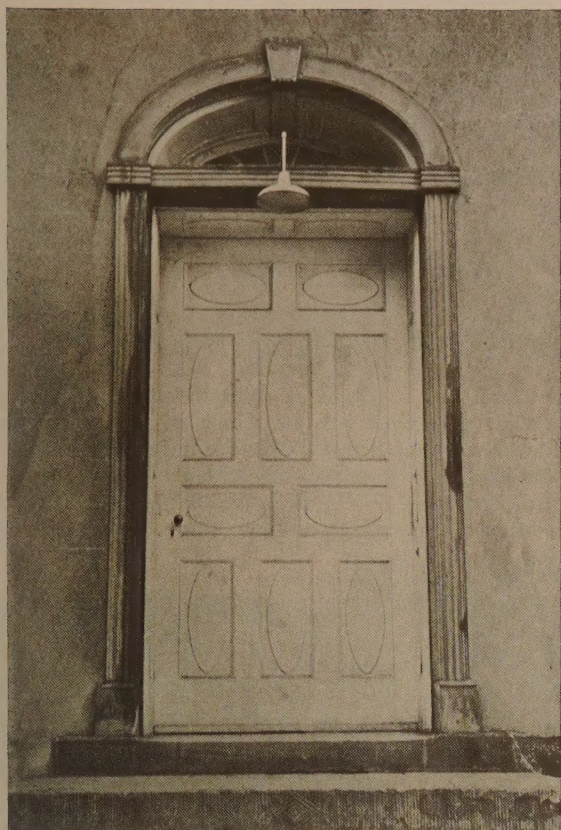


Fig. 4. Doorway of the temple.

stonework with rusticated joints, and quoins at the corners, to harmonize with the masonry walls below. The main cornice of the building is also of wood and of modified Doric detail.

With the exception of the glass and hardware, all materials used in the construction were of local origin. Native oak and yellow poplar were used for framing. For the interior finish, pulpits, and pews, native whitewood and black walnut were the principal materials employed. The lumber was prepared at a local mill from timber given by members of the community from their own farm lands. The finish was all prepared by hand, on the premises. Some interesting accounts are given as to methods employed, one of the most unusual being that oxen were used to draw the large planes used in fluting the casing members of the eight wood piers in the main auditorium.

The glass used in the windows was brought from the Eastern States. At that period only small sheets of glass could be made, and as a result the larger panes were made up of several pieces of varying thickness, carefully cut and fitted together. The original glass, with the exception of parts repaired, is still in place. The design of the windows is such that the divisions are comparatively small, consequently there are some 3,500 panes of glass in all the windows of the temple. The lighting effect resulting from these windows is unusual and very pleasing. The white walls, pews, pulpits, and trim add to the lightness of the interior.

The most distinctive feature of the temple is the plan; the number and the arrangement of the pulpits being unique in every respect. It is here that this first Mormon temple differed from all other religious edifices in the world. The form and arrangement were dictated by the ritualistic ideas instituted by Joseph Smith, and a study of the plan, which

is here presented in measured drawing (Fig. 2), will show that the temple had little in common with the usual church edifice. The building is not large, the plan being only 59 feet wide and 79 feet long. The first floor contains the main temple auditorium. The second floor is of the same general arrangement, the auditorium being used for educational purposes. The third floor is divided into various study rooms.

The entrance (Fig. 4) to the temple auditorium is through a vestibule, which has at each end a simple but beautiful winding stairway. These stairways (Fig. 5) are continuous from the first to the third floor. Under each, on the first floor, is a small vestry-room opening upon the hall. In order to admit light to the inner window of the lower vestibule, a light-well is provided in the floor of the vestibule above, as indicated on the plan. By this scheme the auditorium is well lighted on all four sides. The interior construction, over the auditorium, is supported on eight wood piers (Figs. 7 and 8), which are continuous from the basement of the building to the roof framing, and are arranged in two rows, so as to form a three-aisled plan, the central aisle being wider than the side aisles. Over the side aisles there is a flat ceiling, but over the centre aisle there is a low elliptical vault of wood and plaster construction. The piers consist of a single yellow poplar timber about twelve inches square, encased in a whitewood boxing the sides of which are fluted. This casing is considerably larger than the pier within, thus allowing space inside for ropes, pulleys, and other ingenious devices for operating drop-curtains about the pulpits.

The most interesting features of the interior are the pulpits, especially the two in the main, or temple, auditorium.



Fig. 5. Detail of winding stairs in the vestibule.





Fig. 6. Detail of light vault in second-floor vestibule.

They are the most distinctive features of the whole building, and because of their design and architectural details are worthy of special attention. There are two groups of pulpits in the main auditorium (Figs. 1 and 9), one at each end of the room, representing the two priesthoods of the church, viz., the Melchisedec and the Aaronic. Each of these is divided into four sections, to represent the four grades of presiding officers, and each section contains three seats, for the officer and his two counsellors. Thus we have twelve pulpits in one—the number being symbolical of the number of disciples. The pulpits are elevated and terraced, and are made accessible by flights of steps. At either side of the pulpits are elevated box-pews, at a slightly lower level than the pulpits, and intended for minor officials or missionaries of the church. These are entered, not from the pulpit steps, but by means of separate doors and steps from the main aisles. The whole ensemble is most pleasing, piling up in a majestic manner, and when filled with church dignitaries must have presented a stately appearance to the worshippers.

The pulpits are highly ornamented with hand-carved work (Figs. 1 and 11), and are unusual both in design and in combination of details. The craftsmanship is excellent in

every respect; and, although neglected for half a century, they are to-day in a fine state of preservation. The two groups of pulpits are identical except for the initial inscriptions (Fig. 1), which indicate the rank of the various members of the two priesthoods. The drop-leaf of the front section of each of the pulpit groups, and the hand-rails of the step railing, are of native black-walnut wood, stained dark, but the balance of the pulpits is finished with native white-wood, painted white. The panelling, mouldings, and carving on the pilasters show refinement of line and careful execution. The chief carved ornament used is the guilloche, known to us from the time of the Greeks, and a favorite motive during our Greek Revival period.

The setting of the pulpits adds much to their effectiveness. Each one is placed in front of and centres upon a large elliptical arched window, which forms a unique background for it. The trim and other architectural elements of the window are so designed and arranged as to enhance the pulpit in front of it. The Melchisedec pulpit (Fig. 7) is in front of an outside window at the opposite end of the audi-

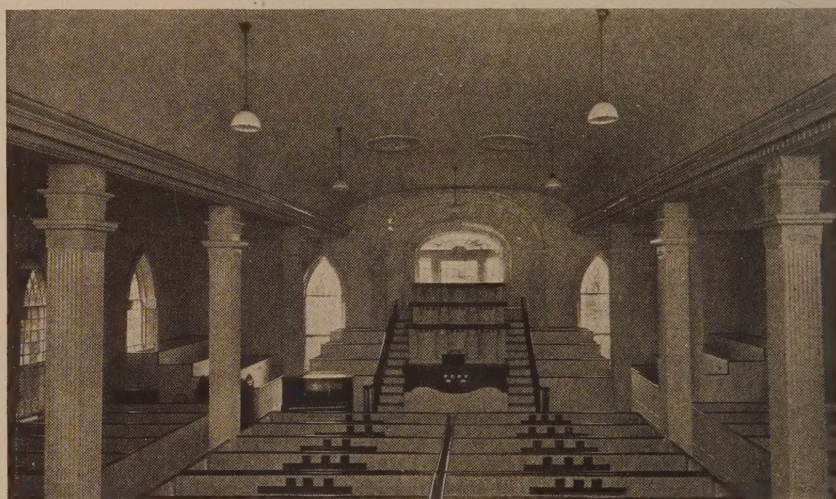


Fig. 8. The main auditorium.

torium from the entrance vestibule. To gain the same effect for the Aaronic pulpit, which is built against the inner wall of the vestibule, a large inner window is provided in this wall, which is lighted by an outside window on the front of the church (Fig. 3), the light coming through a light-well in the upper vestibule floor. The trim of these windows is highly ornamented with carving (Fig. 9), to harmonize with the work on the pulpits, the chief forms of ornament used being leaf mouldings and the guilloche.

The arrangement of the second-floor auditorium is identical with that of the main auditorium below. However, the pulpits are much simpler in design and have little ornament (Fig. 8). The window arrangement behind each group of pulpits is the same, but there is less carving on the trim. The form and arrangement of the pulpits are, in general, the same as those in the temple auditorium, but the stairways are omitted. This room was intended for educational purposes, for the training of missionaries and church officials.



Fig. 7. The second-floor auditorium, used for educational purposes.



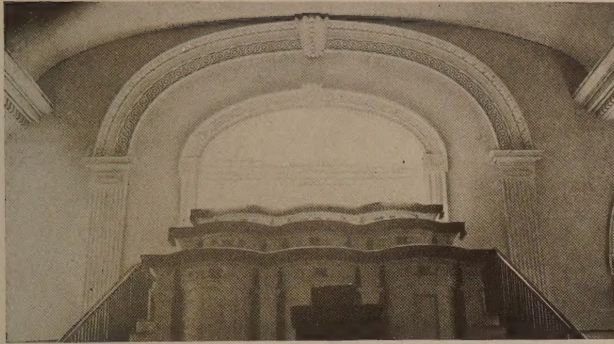


Fig. 9. The Melchisedec pulpit, in the main auditorium, showing carved trim of windows.

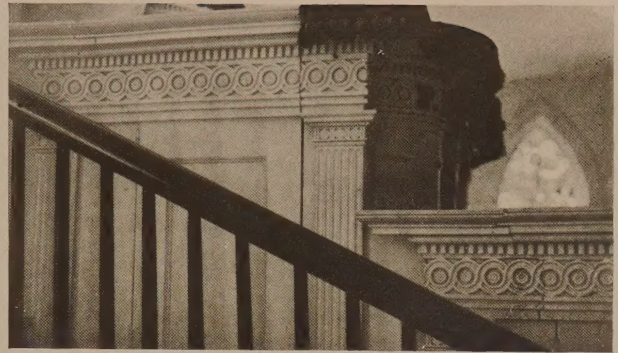


Fig. 11. Detail of carved woodwork on Melchisedec pulpit.

The pews are all of the box type, the arrangement being as indicated on the measured plan. They were made by hand on the premises, and out of native materials. Those connected with the pulpits are elevated and have the same incline as the pulpits. The groups in the four corners of the auditorium are also elevated and arranged to face the nearest pulpit (Fig. 7). The elevated pews have fixed seats and face in one direction only, but all others, those in the centre and along the sides of the auditoriums, have movable seats or benches without backs, and so arranged that the audience may face either pulpit, as the occasion might demand. The pews of the upper auditorium are of the same design and arrangement, but in addition there is a drop-leaf attached to the front and back of each pew enclosure, so placed as to form a study table or writing desk.

Throughout the interior it is to be noted that most of the forms suggest the Post-Colonial, especially in disposition, but that the details, such as the trim, carved work, and mouldings, show considerable Greek Revival influence. This is most noticeable in the details of the trim and the carving of the pulpits. The trim of the window and door openings (Fig. 13) is, in most cases, of the heavy block type, the surface being ornamented with the peculiar planted-on strap work, suggesting the Greek fret.

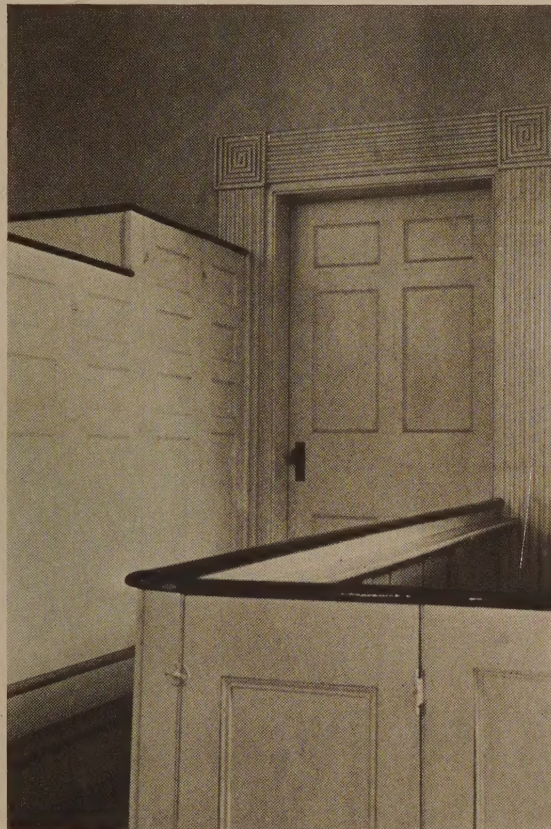


Fig. 13. Detail of door trim and pew enclosure in main auditorium.

The names of the designer and the craftsmen who executed the beautiful interior work of the temple will probably never be known. Of this we may be sure: they were not only craftsmen of unusual skill, but were inspired artisans working in the same spirit as did the builders of the great cathedrals in mediæval times.

At the time of the exodus of Joseph Smith and his followers from Kirtland to Independence and thence to Nauvoo, there seems to have been a number of the less radical of the cult who remained in Kirtland and vicinity. This little remnant, after many years of outward inactivity, together with other followers left behind when the main body of the Mormons moved to Utah, and who seem not to have approved of the later developments within the Mormon Church, became reorganized as an independent church. This body, through legal proceedings, gained possession of the old temple in Kirtland in 1880. Through their efforts the building has been completely renovated and restored, and it stands to-day in practically its original condition. To this little band of followers we are indebted for the preservation of this un-

usual example of early American architecture.

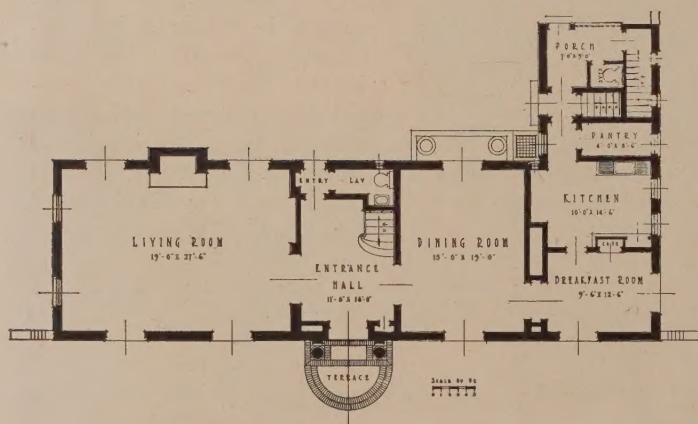
In many details, the work is of sufficient architectural value to make it an interesting study.

### What a Treasure-House It Will Be for American Designers!

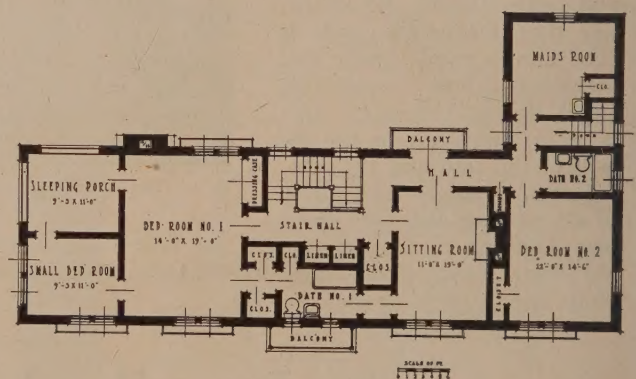
THE new De Forest wing of the Metropolitan Museum of Art promises to be ready by October. It will provide eighteen American rooms and over 500 pieces of furniture, and many other things of the greatest value and interest will have adequate display space. It will be a veritable treasure-house for every one who cares about the advance-

ment of art in design, and happily the Museum is constantly doing a splendid service in its various exhibitions devoted to the industrial arts. Both Mr. Kent and Mr. Bach, the associate in industrial arts, are tireless in their efforts to further the good work that has already been accomplished.





FIRST FLOOR PLAN  
SCALE 1/8" = 1'-0"



SECOND FLOOR PLAN  
SCALE 1/8" = 1'-0"

HOUSE, EUGENE R. MUNGER, BIRMINGHAM, ALA.

Warren, Knight & Davis, Architects. Wm. H. Kessler, Landscape Architect.





DETAIL AT BACK.



ENTRANCE DETAIL.

HOUSE, EUGENE R. MUNGER, BIRMINGHAM, ALA.  
Warren, Knight & Davis, Architects. Wm. H. Kessler, Landscape Architect.



# The Greenwich Savings Bank

York & Sawyer, Architects

ONE of our Gothic architects said recently that the classicist has a great advantage, since everything he does is in the books, and he need only half design, or, rather, design only half of, his building at that. The one-half drawn, he creases the paper down the central axis, rubs the back of the drawn side with a smooth knife handle, and there he is, his work finished, stereotyped, complete, dry, and trite!

Mr. Magonigle, in his witty article in the June *Institute Journal*, "Plagiarism as a Fine Art," speaks of the pressure under which the modern architect works, of how driven he is, of how little time his manifold duties leave him to think or invent, and of how easy it is to drift into the library of photographs and monographs and to warm over the old material with the addition, perhaps, of a dash of the favorite sauce which each architect habitually employs. He does admit, later, that he does not expect the architect to invent a new language to express his new thought, and that it is legitimate to use the parts of speech familiar to us all, the alphabet of our race.

Well, we Americans have the most generous fund of tradition that has ever formed the inheritance of a people. Our language, written and spoken, has borrowed from all the others, living and dead, and like any other vital thing, it is constantly abandoning old words, old forms, adopting new ones from a thousand sources, perfecting itself as the vehicle in which our minds travel and express themselves.

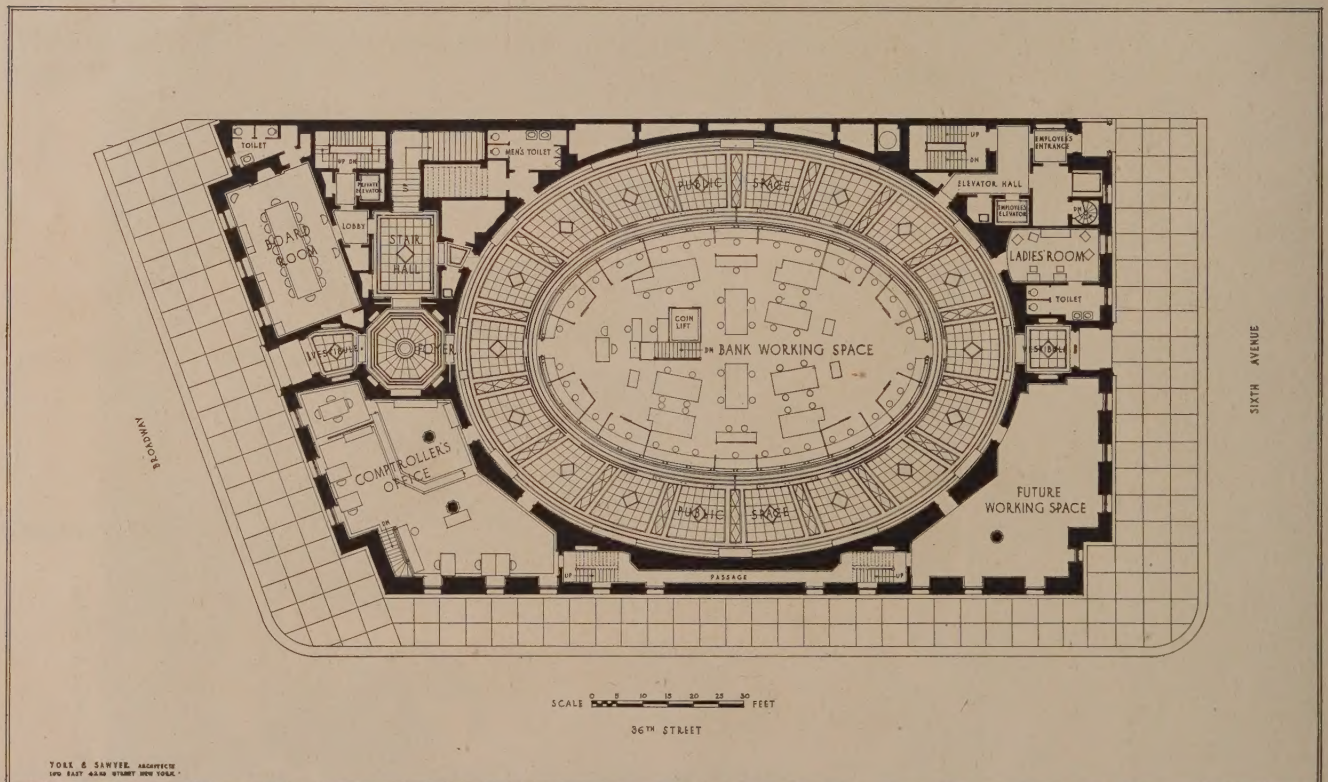
So, our architecture, drawing upon all that has gone before, adopts what seems most applicable, asking not: Is

this original? but: Is this the best motive that man has ever invented for this purpose?—and perhaps the architecture of here and now is developing as rapidly as ever in the past; perhaps a building designed upon a definite tradition, modified and adapted to its present purpose, will last in our appreciation as long as if it suggested no pedigree other than that of the soapbox with misfit lid, its edge incised with ornament suggesting (for it is impossible to be so original as to avoid suggestion) the figures in that quaint toy, the stereopticon.

The Greenwich Savings Bank is frankly "classic," Renaissance if you prefer. It employs an order and the column is Corinthian, and the capitals are reminiscent of those employed in the circular temple at Tivoli. The moulding at the foot of the rusticated "basement" suggests again the mould of the base of the temple of Vesta, a curve so beautiful, so individual, that it has never been bettered, and is recognizable anywhere as a line of genius.

In this case it was the building committee which decided, at the first meeting, that the building should be "Corinthian," that it should have porticos at either end, and that its long side on Thirty-sixth Street should be enriched by engaged columns and not merely by pilasters.

As the Greenwich has been for ninety-five years on Sixth Avenue it was desired that it should have an entrance on that street as well as on Broadway, and this requirement, making the banking-room a public thoroughfare between the two doorways, suggested a central working space,







Board room.

while the sharp angle which Broadway makes with the other sides of the lot led to the elliptical banking-room.

The fact that the officers did not require to be in immediate contact with the working space resulted in their being placed on the mezzanine gallery, over the Broadway entrance. The central working space led to the provision of central lighting by a single skylight so large as to be adequate in usual weather.

It is in this general plan with its highly practical arrangement of the working force, its provision for the prompt handling of the public, its utilization of every inch of space left by the great room, 160 feet long and 88 feet wide, and in the simplicity with which this room is treated that whatever originality it has is shown.

The choice of materials is fortunate: for the exterior a variegated Indiana limestone, while in the interior this stone is interspersed with a proportion of Ohio sandstone, somewhat warmer in tone. The floor of the banking-room is banded with Travertine, which separates the panels of dark Levanto, and the borders are of black and buff mosaic. In the centre of each panel is a lozenge of sea green containing an inlay of black mosaic.

The counter itself is of black and gold marble, beautifully selected and matched, surmounted by a bronze counter-screen which has an old gold finish. The octagonal vestibule has in its centre an inlay of a ship in bronze set in colored marbles, surrounded by the name of the bank.

The basement contains the usual provisions for lockers, toilets, storage, etc., while the vault is reached directly from the working-space above by the stairs and coin lift in the centre of the plan. The president's room occupies the southwest corner of the mezzanine, overlooking Broadway and Thirty-sixth Street, and is entered from the officers' platform. There is a committee room next to it. Over the banking-room on the north side of the building there are kitchens and pantries, serving both the employees' dining-room on the Sixth Avenue end, and two officers' dining-rooms on the Broadway end. There is also a large rest room for clerks, which may be used in case of emergency as a dormitory. All these rooms open out on the roof of the bank, which provides sufficient space behind the high parapet of the attic for ball pitching or other exercise.

Where all the working light is provided by a single ceiling light—and this is 66 feet long by 35 feet wide—it

becomes of great importance to have it easily reached for cleaning. A series of small trolleys, hung from above, run across this ceiling light at such short intervals that a vacuum-cleaner, connected at one of the many outlets, can reach the whole skylight with ease, and the glass be kept clean without difficulty, and at a minimum of expense.

Photographs published herewith show the general character of the work, and of the detail, to which great attention was paid. It is, unfortunately, impossible to take any photograph which gives an adequate idea of the whole of an elliptical room of these dimensions.

A feature of the design is the use of inscriptions, both inside and out. Over the Sixth Avenue portico one reads:

"THIS BANK WAS INCORPORATED IN THE YEAR 1833 AND WAS FIRST OPENED AT NUMBER TWELVE CARMINE STREET WHERE IT REMAINED UNTIL 1839 WHEN IT WAS REMOVED TO SIXTH AVENUE OCCUPYING NUMBER ELEVEN UNTIL 1846—NUMBER FORTY-ONE UNTIL 1854—NUMBER SEVENTY-FIVE UNTIL 1892 AND NUMBER TWO HUNDRED AND FORTY-SIX UNTIL THIS BUILDING WAS ERECTED 1924."

and in the attic on Broadway:

"YOU CAN HAVE NO FRIEND MORE FAITHFUL THAN THE MONEY YOU HAVE SAVED AND YOU DO WELL TO JOIN YOUR FELLOWMEN AND NEIGHBORS IN HELPING TO MAINTAIN AN INSTITUTION TO MAKE FOR THAT GOOD FRIEND—YOUR SAVINGS—A SAFE HOME WHEREIN BY BEING OF SERVICE TO OTHERS—THEY DO THEMSELVES GAIN SOMEWHAT OF WORTH."

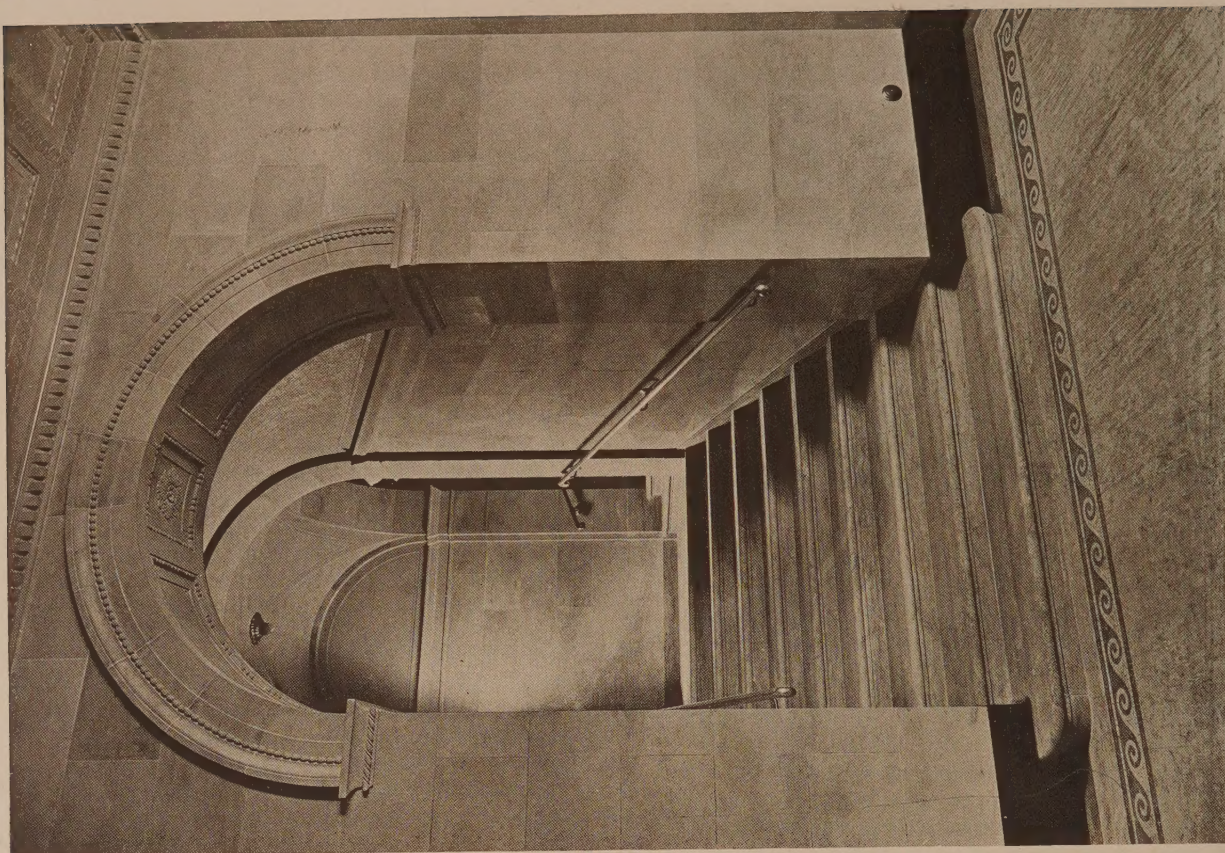
while in the banking-room an inscription extends around the whole frieze, and others flank the clocks on the long sides of the ellipse.

Where so much depends upon thoroughness and accuracy of workmanship, selection and arrangement of material, and the fine execution of detail, and where the result shows so high a degree of performance, it seems worth while to express appreciation of all those concerned in the construction of the bank and in the furnishing of all its varied details.



President's dining-room.

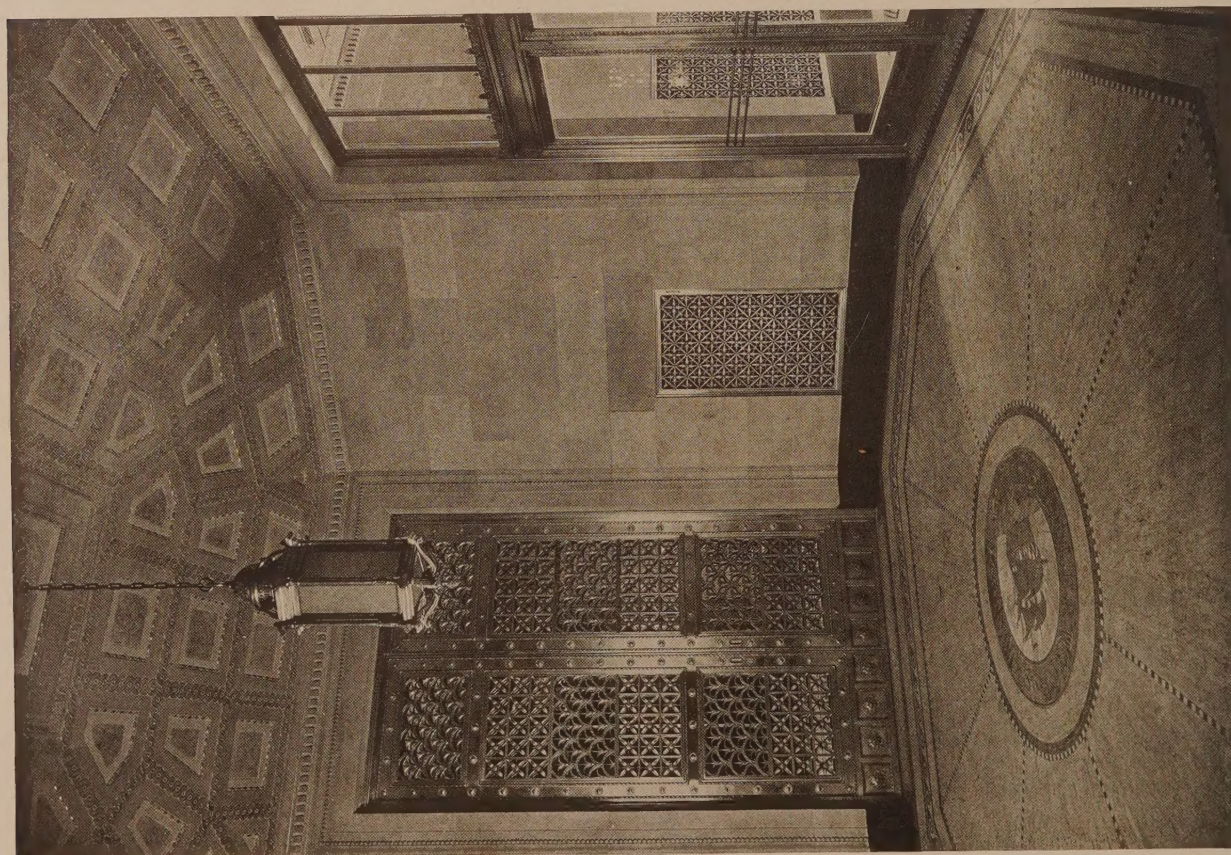




York & Sawyer, Architects.

STAIRCASE TO OFFICERS' MEZZANINE

GREENWICH SAVINGS BANK, NEW YORK.



FOYER, BROADWAY ENTRANCE.





### *Getting Away from Precedent*

AT the recent convention of the American Institute of Architects nearly an entire afternoon was given over to listening to a series of papers on "What Is Precedent Doing to American Architecture?"

The architect responsible for the discussion, H. Van Buren Magonigle, preferred to call his paper, "Plagiarism as a Fine Art," and in doing so he started something. Without a sense of humor, the blessed faculty that helps us to see ourselves as others see us, and to maintain a due regard for the fallibility of all things human, some who heard Mr. Magonigle's paper might have received the impression that he was having fun with his fellow practitioners, that he did not take either himself or his work seriously, but the delightful thing about his point of view was that he "had it in" only for the architect who was either too busy or too lacking in a willingness to do some honest thinking of his own to make "precedent" something besides a mere easy cribbing from the library or a current magazine. His analogy of Architecture with Music, Painting, and Sculpture was happily put.

There is no new thing under the sun; we are not going to invent a native and unheard of American architecture out of nothing, we are going right on using old and tried forms and principles of design, but we are going to mix them up in new ways and as far as possible cease to be bossed by such mere trifles as old formal styles. Gothic, of course; Italian Renaissance, certainly Greek, yes, you can't get away from them altogether; but why tie a tag to Henry Bacon's noble Lincoln Memorial, Mr. Magonigle's Kansas City Memorial, Mr. Goodhue's Nebraska Capitol, Mr. Hood's black and gold building for the American Radiator Company, the beautiful Bush building, or even the marvellous Woolworth monument? Classification is the bane of all art. When you put a tag on it, you throw it into the junk heap of the commonplace. Our tall commercial buildings are often dubbed "Gothic," but in spirit and intention they are about as far from Gothic as an Indian tepee is from the pyramids.

"Pecksniff was a piker," as Mr. Magonigle said, and we are going to add the following pertinent paragraphs from his address, so that those of our readers not members of the Institute may also benefit by a little self-communion:

"We architects in America have raised plagiarism from the low estate in which it languishes in the other arts and professions to the rank of an art in itself and one highly esteemed. We applaud its successful practice by each other, we educate our public to applaud it, and our public responds with enthusiasm and rewards us by bestowing further opportunities for its exercise. Before you damn me quite for such a statement and bristle at it as a base betrayal of a guild secret, let us consider together and see whether I am far wrong.

"In literature, the undergraduate who borrows the thoughts and phrases of any other man, living or dead, is plucked if he is found out; in our schools of architecture the unfledged plagiarist gets a medal—the fact that he is unfledged has nothing to do with his not being plucked. The mature writer, novelist, poet, dramatist, who appropriates the intellectual capital of any other author, living or dead, is universally condemned and the offense is rare.

"In music, that subtle and elusive art in which it would seem almost impossible not to repeat harmonies heard perhaps years before, the composer scrupulously avoids the faintest far-off echo of the strains in which other musicians have sung out their souls; and should he perchance fail to do so by never so faint a recall, the critics and amateurs of music instantly pronounce his work reminiscent and the value of his composition is nullified at once; in music the mere reminiscence of another's work is banned.

"Pass the sculptors of the world in review and ask ourselves if they, in all the vast company of works they have wrought in the long history of their art, have not sedulously avoided the repetition of pose or gesture or character that has been used before. And what should be the fate of the sculptor who adapt another man's work, living or dead, to his own uses and calls it his own?

"What of the painter? Is he content to repeat the concepts, the tones, the handling of light or of pigment of dead or living men? Is not his life devoted to the search for a meaning, a coloration, a technique, a point of view, that shall be his very own? The merest novice instinctively recoils from such heady flattery as the implication that he draws just like Michael Angelo; he wants to draw as well as Angelo but he wants to draw like himself, not another, however exalted.

"It is their glory and their pride to be themselves, to be individual, these fellow artists of ours. In short, in the arts of Literature, Music, Painting, and Sculpture, plagiarism is not—well, shall we say, not admired? And the plagiarist, with us so envied, so emulated, and so rewarded, with them weeps and gnashes the despairing tooth in outer darkness.

"Let us ponder these things well and then let us look ourselves square in the eye, perhaps in the sacred privacy of the bath-room mirror, and ask ourselves whether we architects are plagiarists, or not, and if we are, Why? And if we think not, then let us try to formulate a plausible argument to prove that while plagiarism in literature, music, sculpture, and painting is most justly to be condemned and its practitioners ostracised, it is different, somehow, in architecture, and excusable, even laudable. Or let any two of us look each other in the eye like the Two Augurs and try to keep a straight face as we solemnly aver that our work is our very own, individual and original and, above all, that it is appropriate to our own moment in history and



exactly expressive of American ideals and of the civilization of the twentieth century in the United States.

"Pecksniff, you know, used to add a water spout to a pupil's design and call it his own. May I descend to the vernacular long enough to suggest that Pecksniff was a piker?"

### *Business the Great Adventure*

WE are constantly having put before us the names of heretofore great unknown winners in the game of business-life, stories of men who began with nothing but character and industry, who now own Rolls-Royces and can afford bronze dogs and cast-iron jumping deer in their front yards if they want them. How inspiring to youth are these romances of commerce, how true, indeed, is the Algerian doctrine, "where there is a will there is a way." In these modern times the mere poet, painter, architect, musician, followers of the so-called humanities, have ceased to be the popular heroes. Our colleges have awakened to the fact that in commerce and industry there is a never-failing demand for trained brains, and to a realization that business offers opportunity for developing men of the highest character and usefulness.

This is good doctrine taken from the Antioch College Business Code:

"As Farthest North is reached and the highest mountains are scaled, man's insatiable instinct for conquest demands new adventure. To-day the dominant current of human interest runs to commerce and industry. There has been a general conviction that here the finest ethical standards do not apply. They *must* apply if business is to make its possible contribution to human dignity and welfare. Adherence to one's highest standards in business furnishes risk and adventure for the hardest pioneer. This new frontier is attracting the best of the American breed.

"Commerce, through the attention it directs to its wares, now largely affects the habits of men and women in every phase of life. To the extent that it can be brought to express the finest of human purpose, the whole texture of social habits can be refined. Business practice, based upon aspiration and moral discipline as fundamental controls, can profoundly influence human standards.

"At Antioch, business is looked upon as one of the great professions."

Architecture is both a profession and a business, and the "ethical standards" established for the practice of architecture are "the standards that contribute to human dignity and welfare." Business calls upon the highest qualities, and imagination and a sympathetic understanding and keen knowledge of men are evident in the careers of most of our great captains of industry. The spirit of adventure is a part of every real achievement in the world, and what we call the creative faculty is as necessary to the business man as to the worker in the arts. The business of architecture is a great business, and its pursuit happily combines abundant opportunities for both the joy that comes from the pursuit of the thing called beauty, and, if luck and enterprise serve, a comfortable return in the way of merely creature comforts.

### Winners of the Booth Travelling Fellowship of the University of Michigan

THE first award of the George G. Booth Travelling Fellowship in Architecture has just been made by the College of Architecture of the University of Michigan. Of the nine competitors who finished, the designs of two were of such

equal merit that the jury decided to divide the twelve hundred dollar income of the fellowship between Marion F. Blood, a member of the class of 1924, and Ralph R. Calder, who graduated in 1923. Both have had office experience in addition to academic training, and both are students of high scholarship.

The annual income of the scholarship being twelve hundred dollars, each received six hundred dollars, to which Mr. Booth has generously added five hundred dollars for each of the successful competitors. Through Mr. Booth's gracious gift, it thus becomes possible for the school to send two students abroad for a stay of approximately one year.

### The New York Society of Architects

AT the annual meeting and dinner of the New York Society of Architects the following officers were elected for the ensuing year:

James Riely Gordon, president  
Adam E. Fischer, first vice-president  
Edward W. Loth, second vice-president  
Henry Hollder, treasurer  
Walter H. Volckening, financial secretary  
Arland W. Johnson, secretary

The guest speaker of the evening was Mr. L. C. Hart, assistant general sales manager for Johns-Manville.

Mr. Hart addressed the society on the subject of "Salesmanship as a Profession." He gave a logical outline of the development of the selling factor in business and commerce, from the prehistoric origin of barter down to the present time; modern salesmanship now receiving its just recognition as one of the respected and dignified professions. Mr. Hart illustrated his lecture by specific references to barter, trade, and commerce in ancient, biblical, and modern history and by examples of psychological salesmanship in the works of William Shakespeare.

He concluded with an appeal to the architects to give more serious consideration to the salesman calling at their offices, particularly to those men equipped to give service and furnish technical informative data.

### Foreign Travelling Scholarships of the University of Illinois

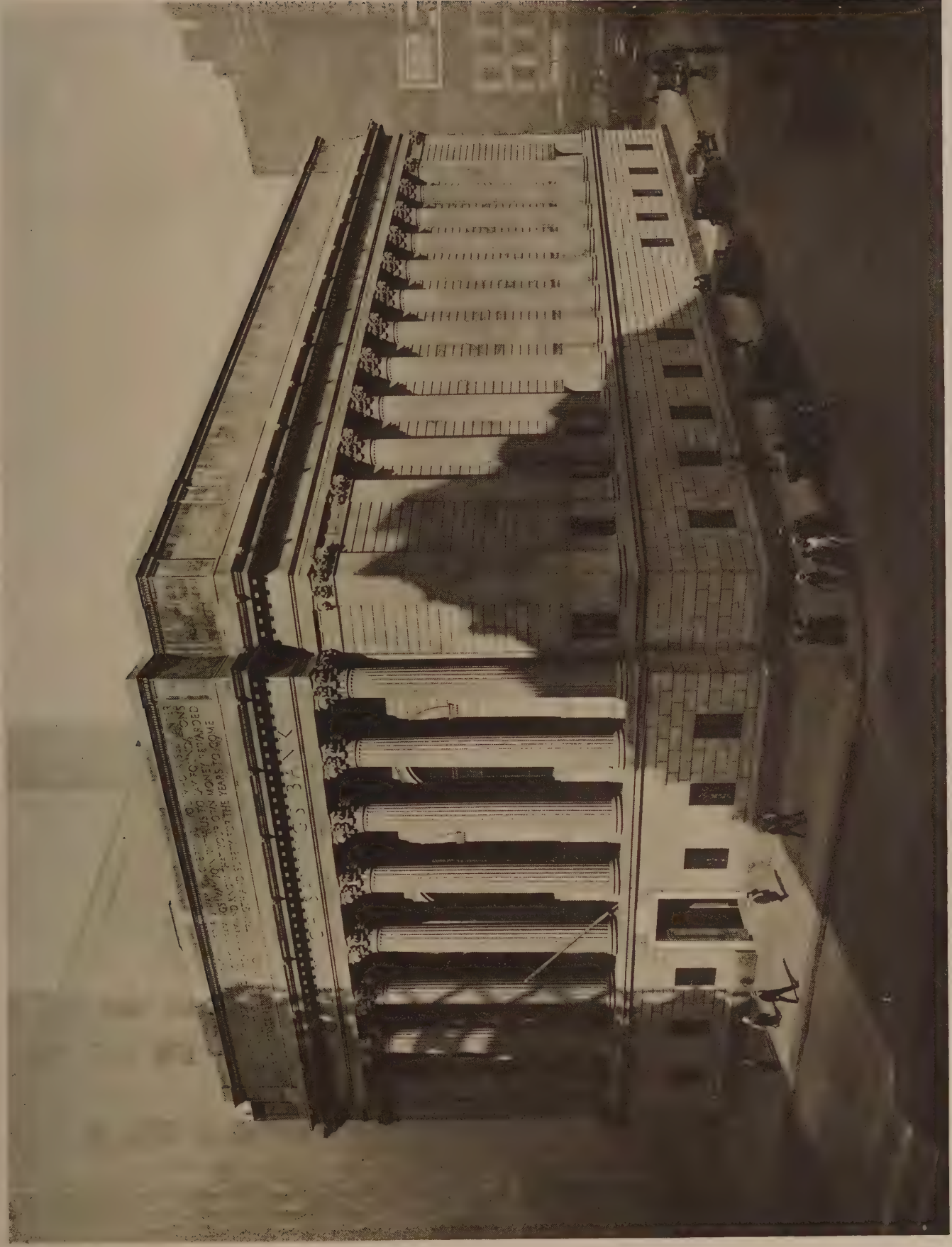
THE Department of Architecture of the University of Illinois takes pleasure in announcing the endowment by Mr. Plym of the following foreign travelling scholarships:

The Francis J. Plym Fellowship in architecture.  
The Plym Foreign Scholarship for architectural engineers.

### For the Training of Apprentices

RECENTLY the American Construction Council announced the creation of a Committee on Apprenticeship, Vocational Guidance, and Craftsmanship with Mr. F. W. Walker, secretary of the Associated Tile Manufacturers, Beaver Falls, Pa., as its chairman. This committee co-operates with employees' and employers' organizations, building congresses, and all other elements in the construction industry, and with educational bodies, local and national, in providing for apprenticeship which will produce the skilled workmen needed in the construction industry.





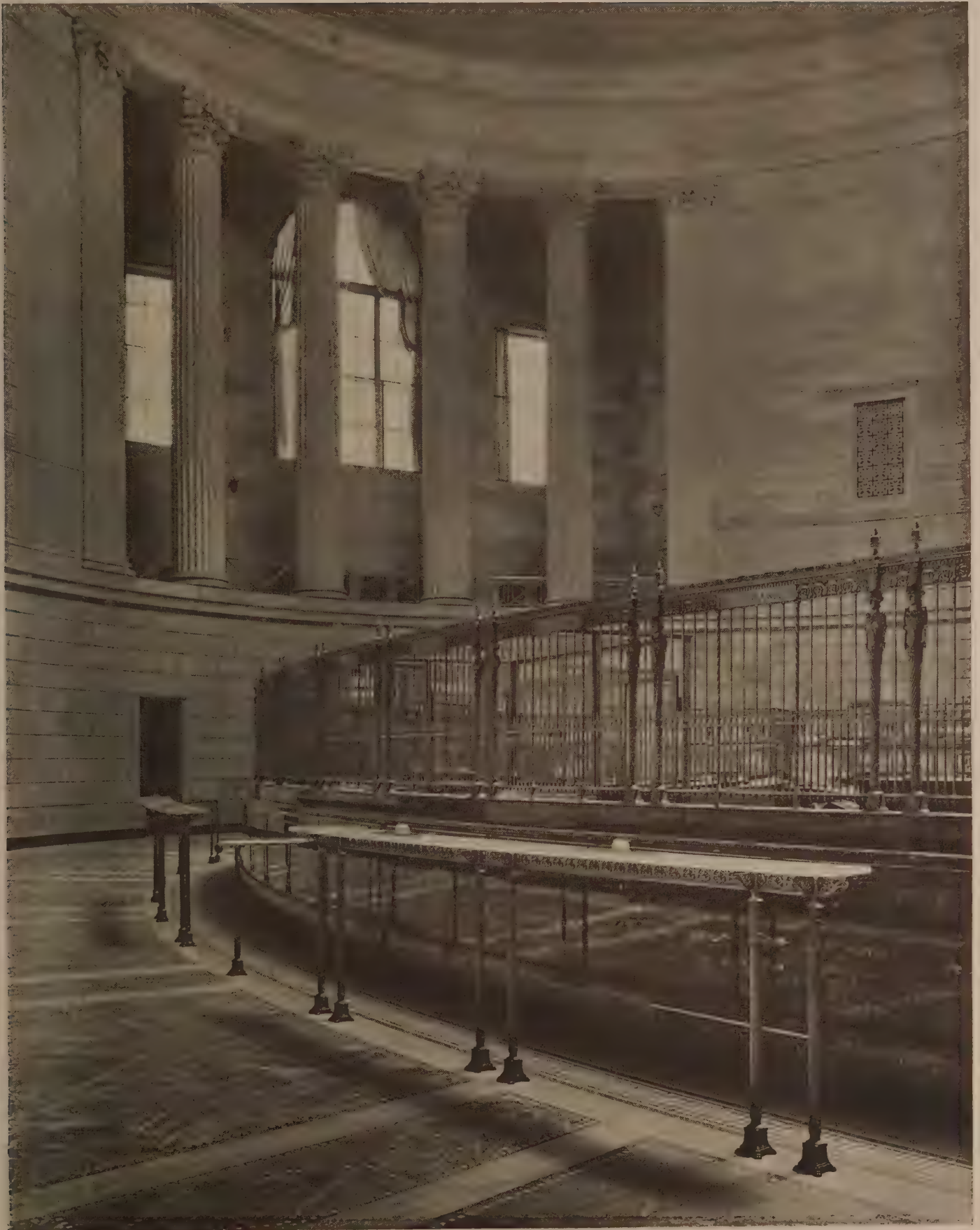
THE GREENWICH SAVINGS BANK, BROADWAY, 36TH STREET, AND SIXTH AVENUE, NEW YORK.

York & Sawyer, Architects.









BANKING-ROOM, TOWARD SIXTH AVENUE ENTRANCE, GREENWICH SAVINGS BANK, NEW YORK. York & Sawyer, Architects.









OFFICERS' SPACE, MEZZANINE OVER BROADWAY ENTRANCE, GREENWICH SAVINGS BANK, NEW YORK.

York & Sawyer, Architects.









SIXTH AVENUE FAÇADE.



ENTRANCE ON BROADWAY.

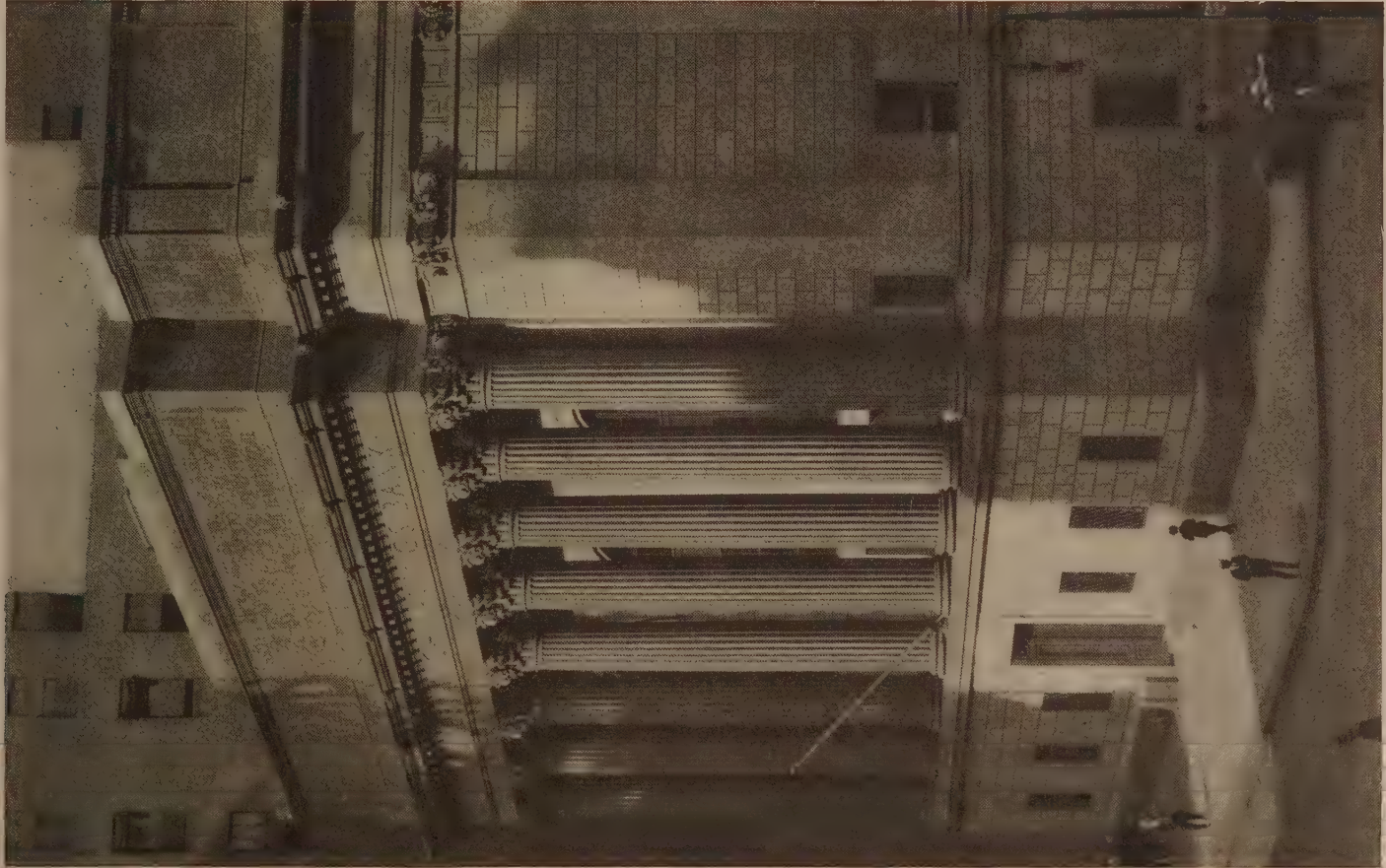
GREENWICH SAVINGS BANK, NEW YORK.

York & Sawyer, Architects.

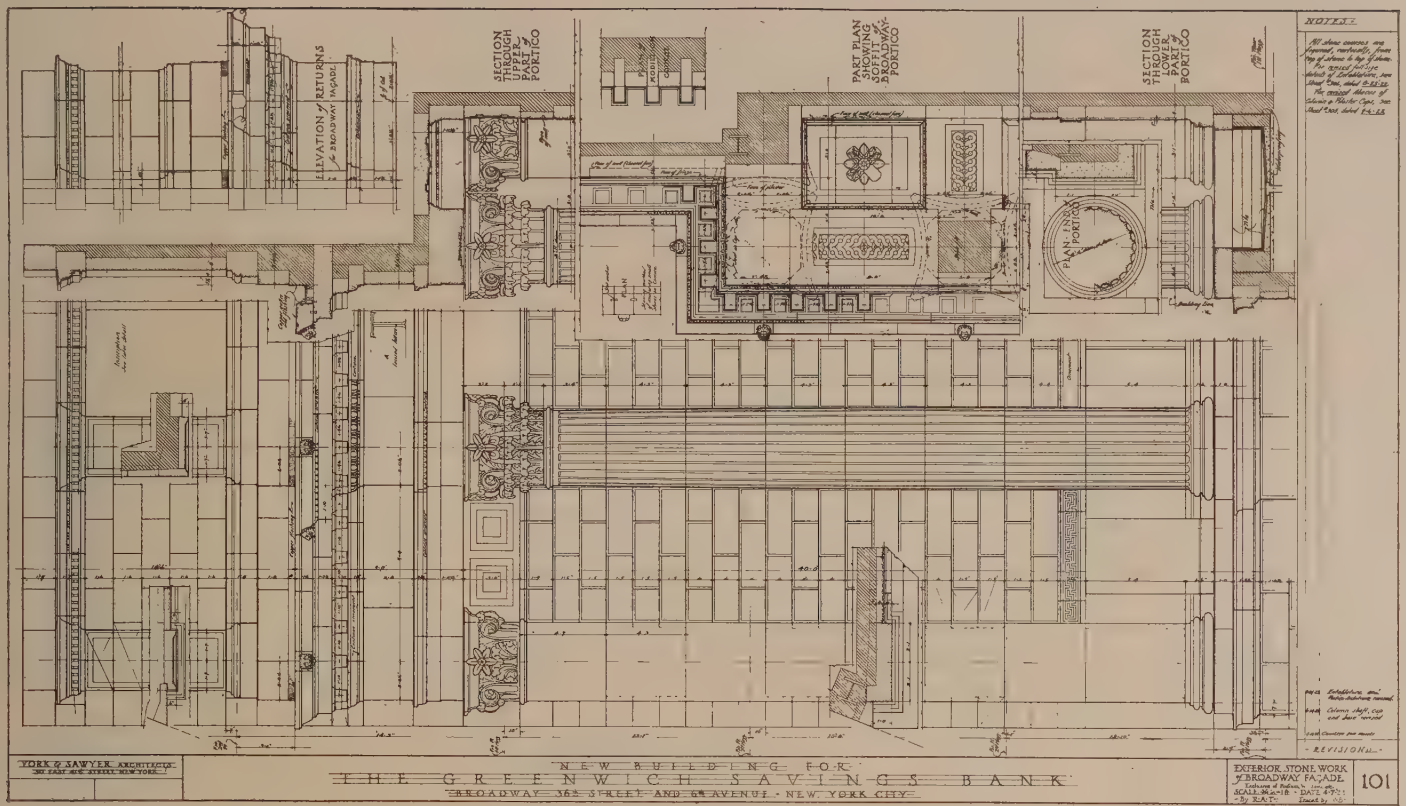








EXTERIOR COLONNADE.



EXTERIOR DETAIL.

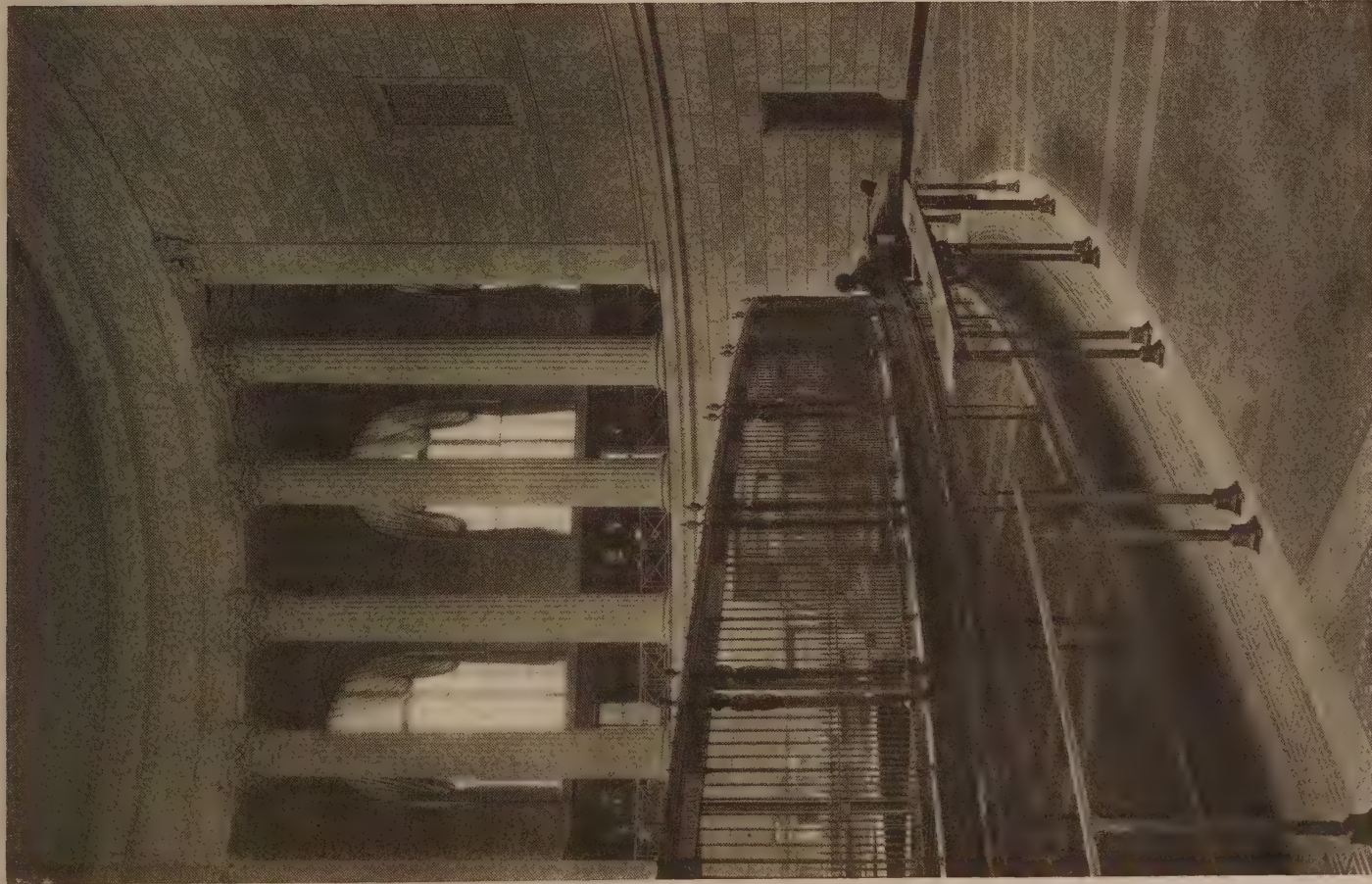
GREENWICH SAVINGS BANK, NEW YORK.

York & Sawyer, Architects.

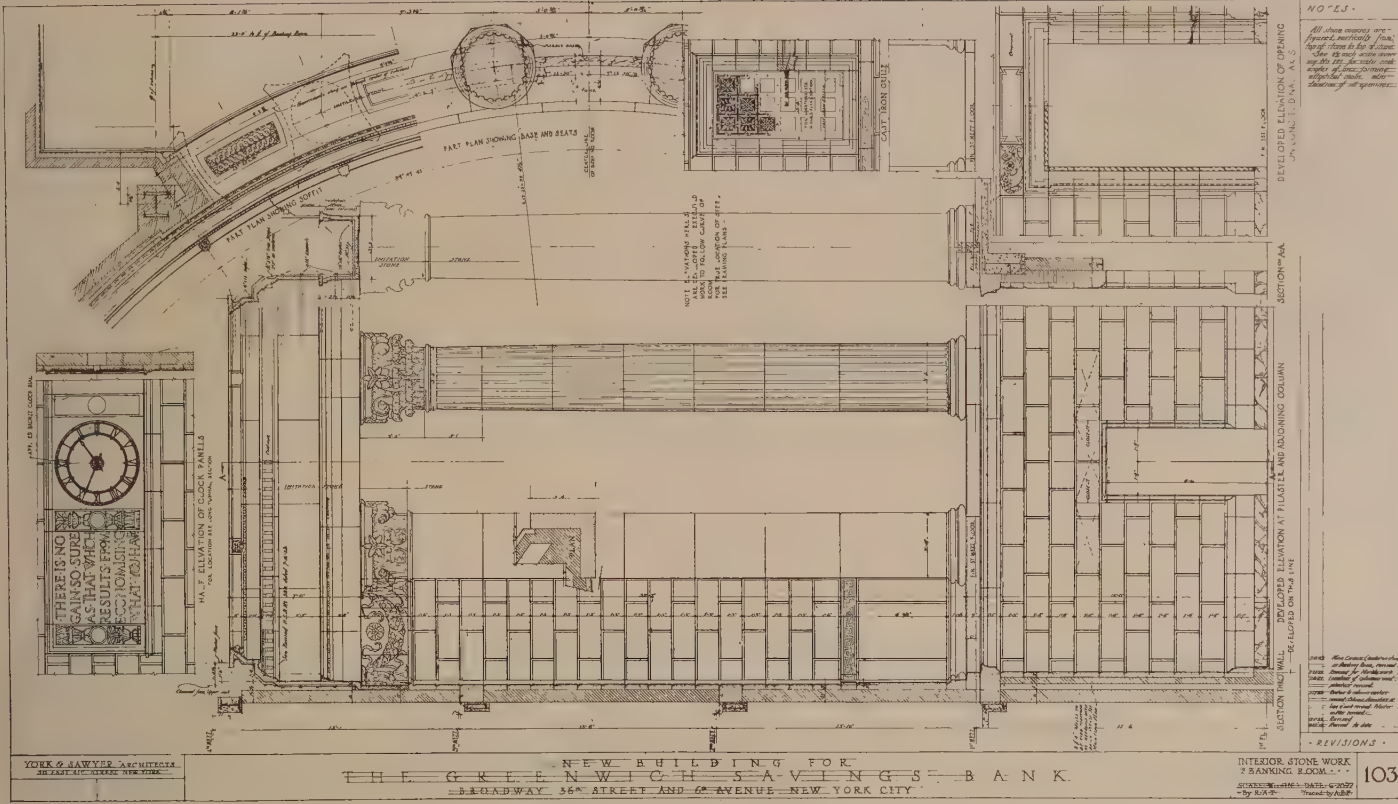








INTERIOR, BANKING-ROOM.



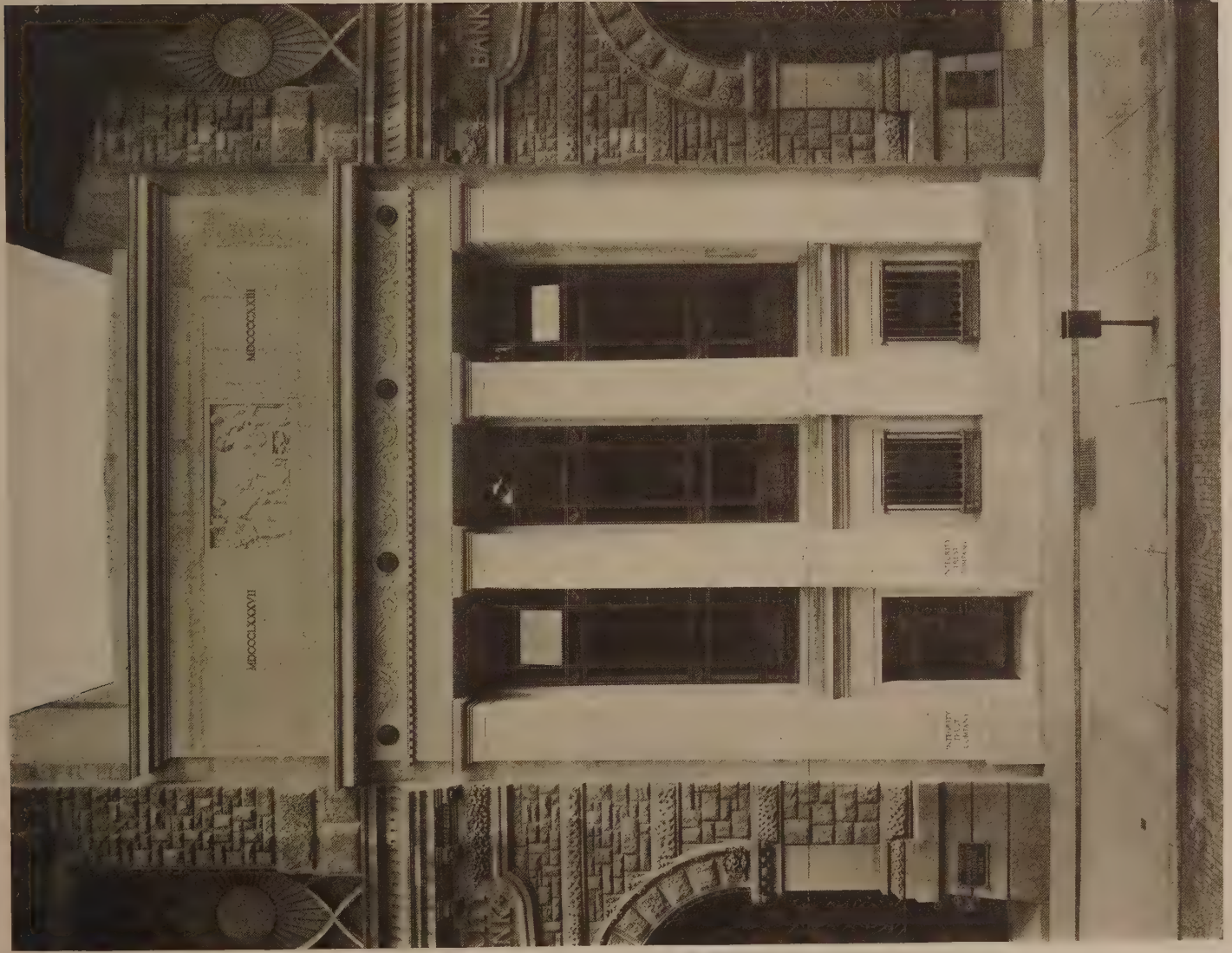
DETAIL, INTERIOR STONE WORK.

GREENWICH SAVINGS BANK, NEW YORK.

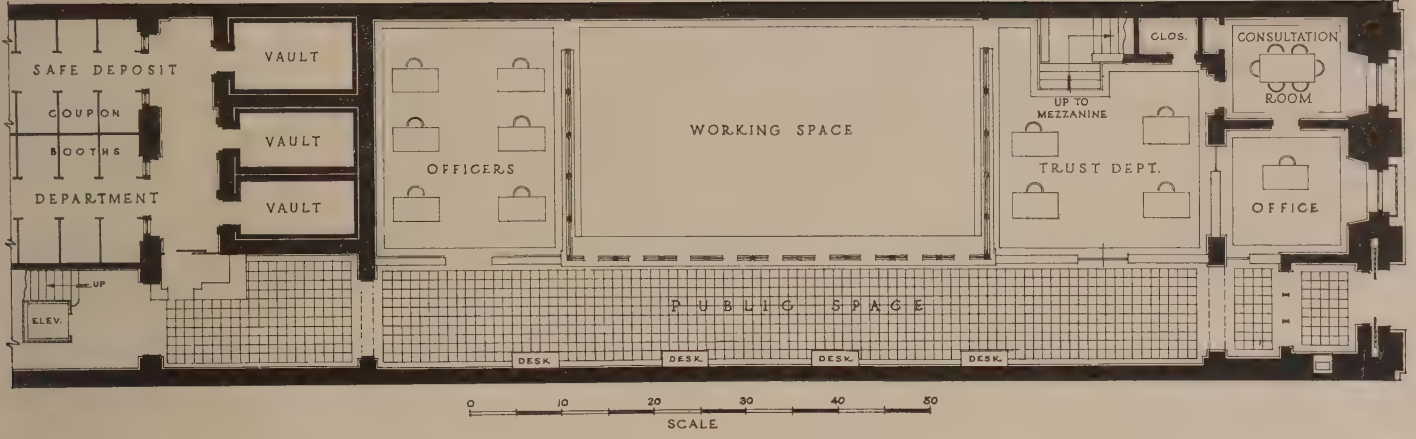








INTEGRITY TRUST COMPANY, PHILADELPHIA, PA.



Paul P. Cret, Architect.









BANKING-ROOM, INTEGRITY TRUST COMPANY BUILDING, PHILADELPHIA, PA.

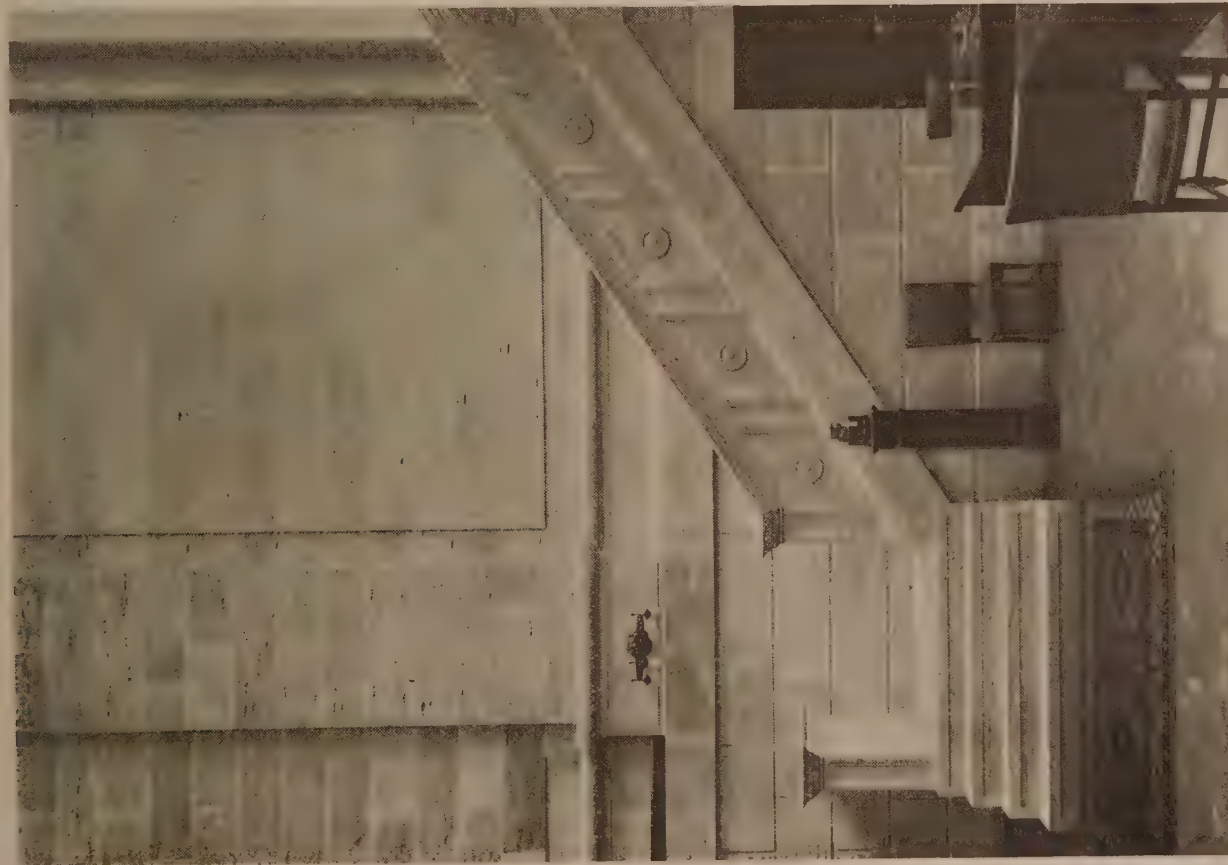
Paul P. Cret, Architect.







August, 1924.



STAIRCASE TO MEZZANINE.



BANKING-ROOM, TOWARD ENTRANCE.

Paul P. Cret, Architect.

INTÉGRITY TRUST COMPANY BUILDING, PHILADELPHIA, PA.





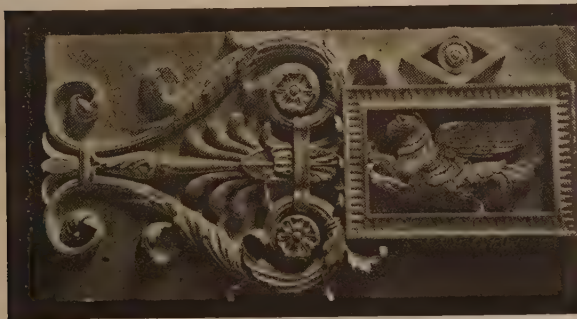




Carved frieze and panel, exterior stone work.



Models for cast-iron windows.



Models for cast-iron windows.



Bronze window.

Paul P. Cret, Architect.

INTEGRITY TRUST COMPANY BUILDING, PHILADELPHIA, PA.









GREEN STREET ELEVATION

Scale  $\frac{1}{4}'' = 1'-0''$

DOOR  
PANEL  
Full size

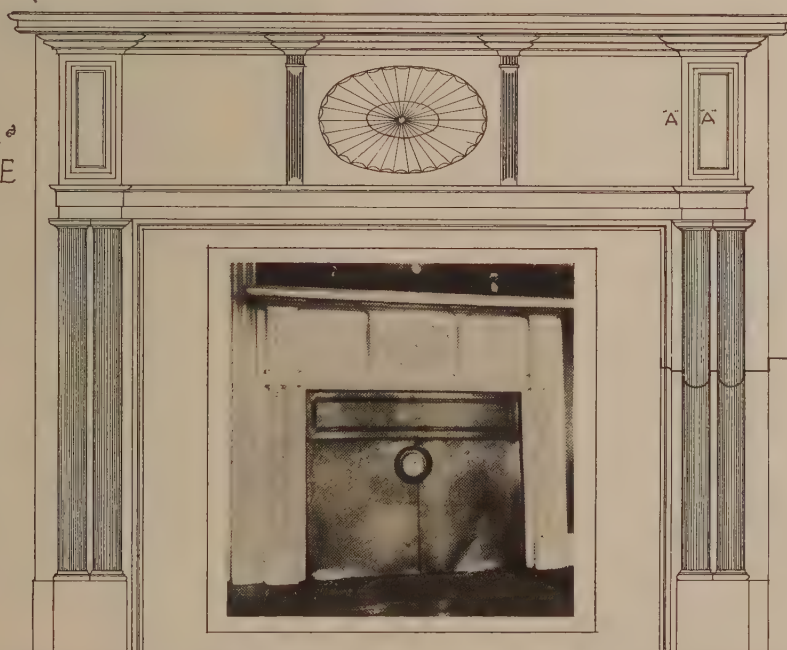
MANTEL CORNICE  
Full size

Brick laid in  
Flemish bond

MAIN CORNICE  
Half full size

ELEVATION OF MANTEL  
Scale  $\frac{3}{4}'' = 1'-0''$

ARCHITRAVE &  
CAP AND BASE  
Full size



SECTION AA  
Full size

EARLY ARCHITECTURE OF CENTRAL NEW YORK

• THE WELLS HOUSE •  
GREEN ST - ITHACA - N.Y

MEASURED &  
DRAWN BY  
CHAS. M. STOTZ







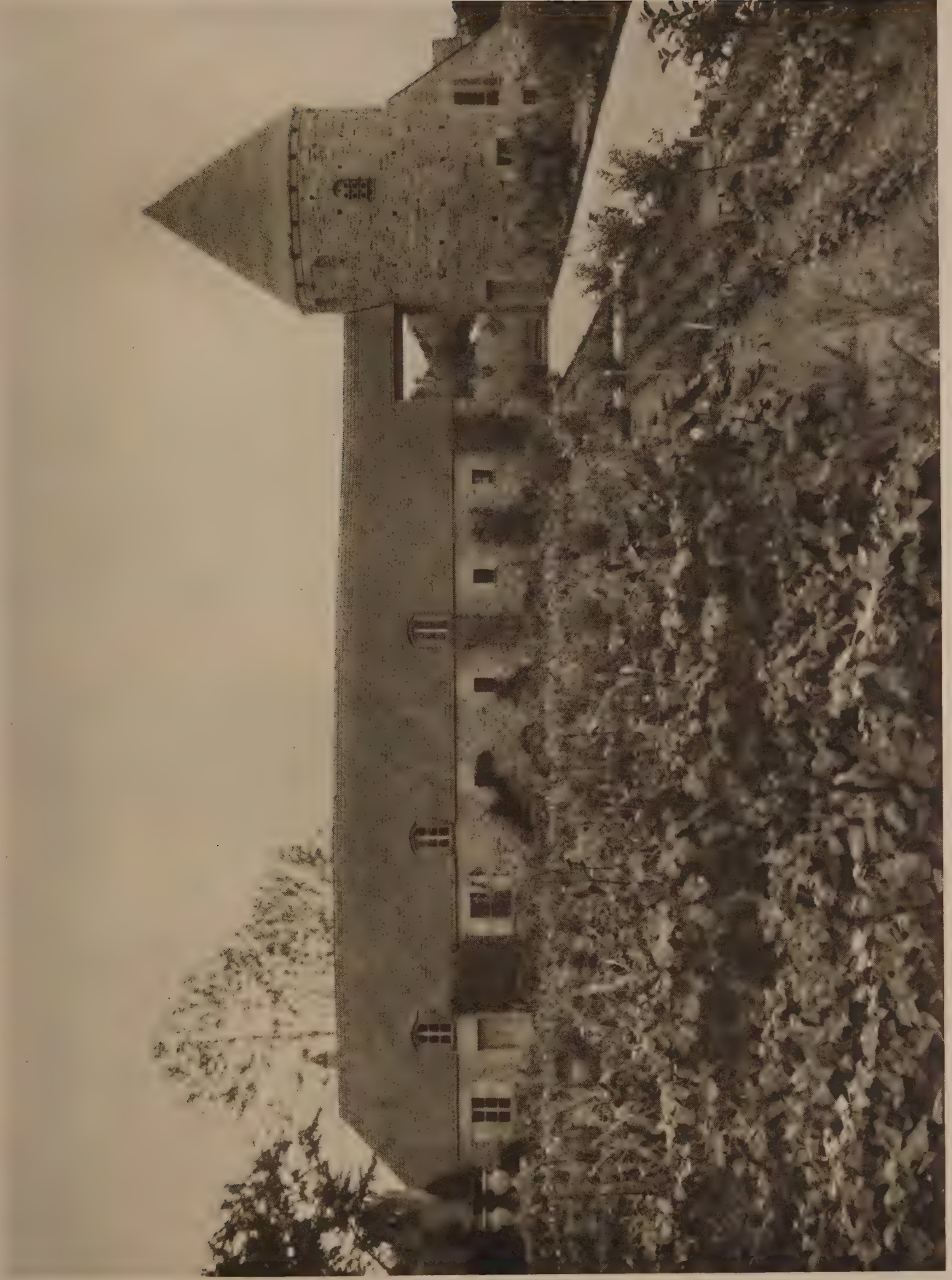


BELVEDERE AND LILY POND, ESTATE ARTHUR E. NEWBOLD, JR., LAVEROCK, PA.  
Mellor, Meigs & Howe, Architects.





AUGUST, 1924.



FARM BUILDINGS, ESTATE ARTHUR E. NEWBOLD, JR., LAVEROCK, PA.

Mellor, Meigs & Howe, Architects.





August, 1924.

ARCHITECTURE

PLATE CXXVI.



FARM COURT AND GOOSE POND.



SHEEP-FOLD AND PIGEON-TOWER.

Mellor, Meigs & Howe, Architects.

ESTATE ARTHUR E. NEWBOLD, JR., LAVEROCK, PA.



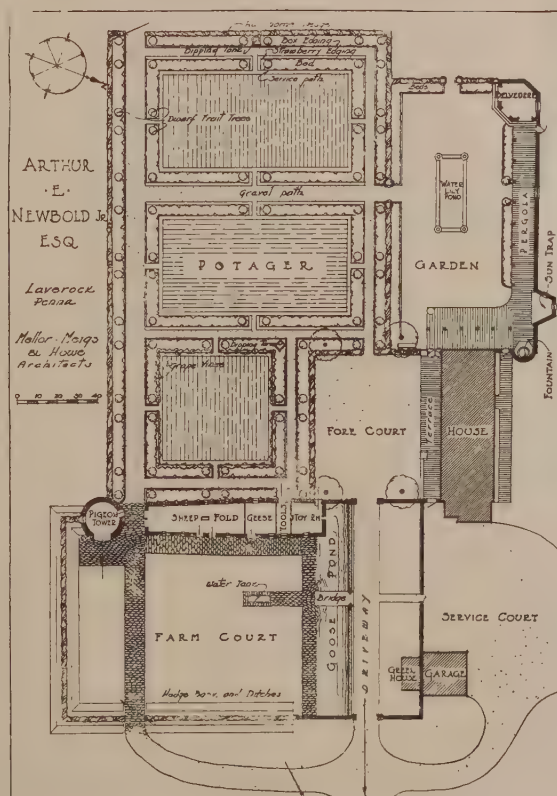




COTTAGE.



GOOSE POND.



PLOT PLAN.

Mellor, Meigs & Howe, Architects.





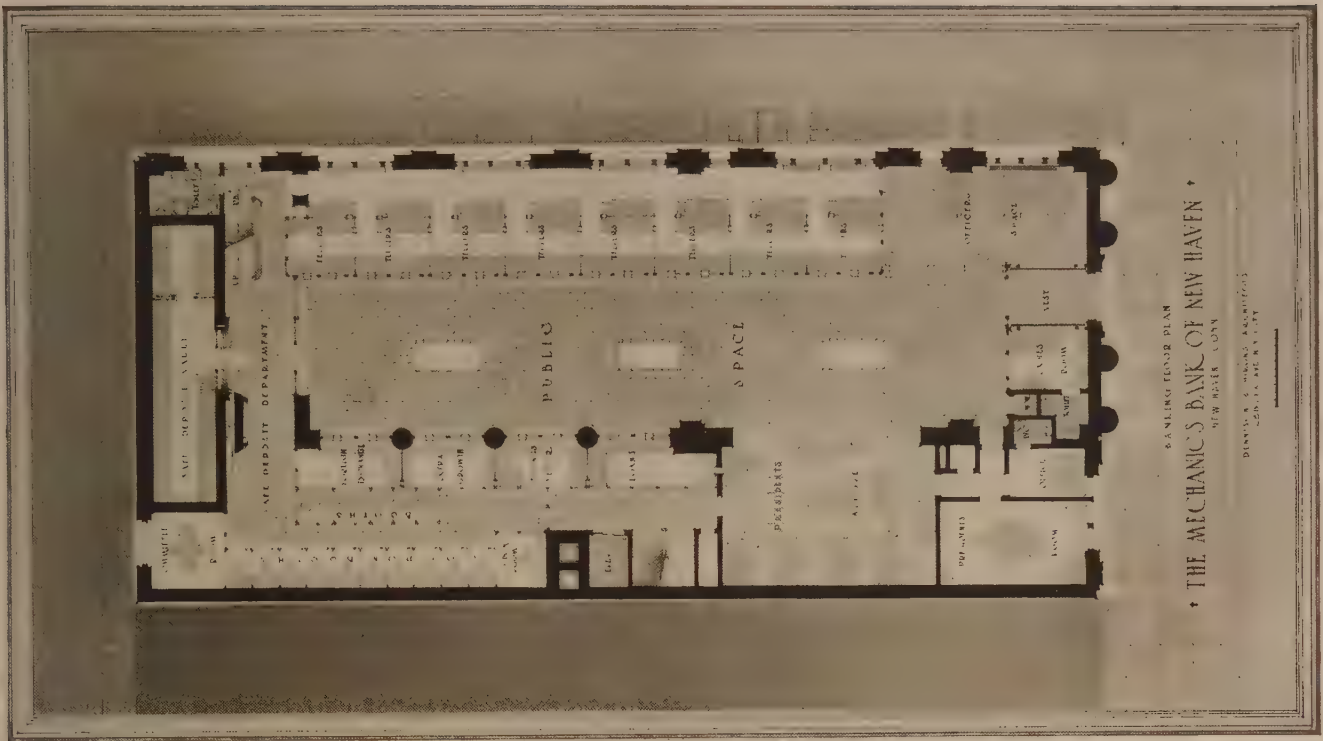


THE MECHANICS BANK, NEW HAVEN, CONN.

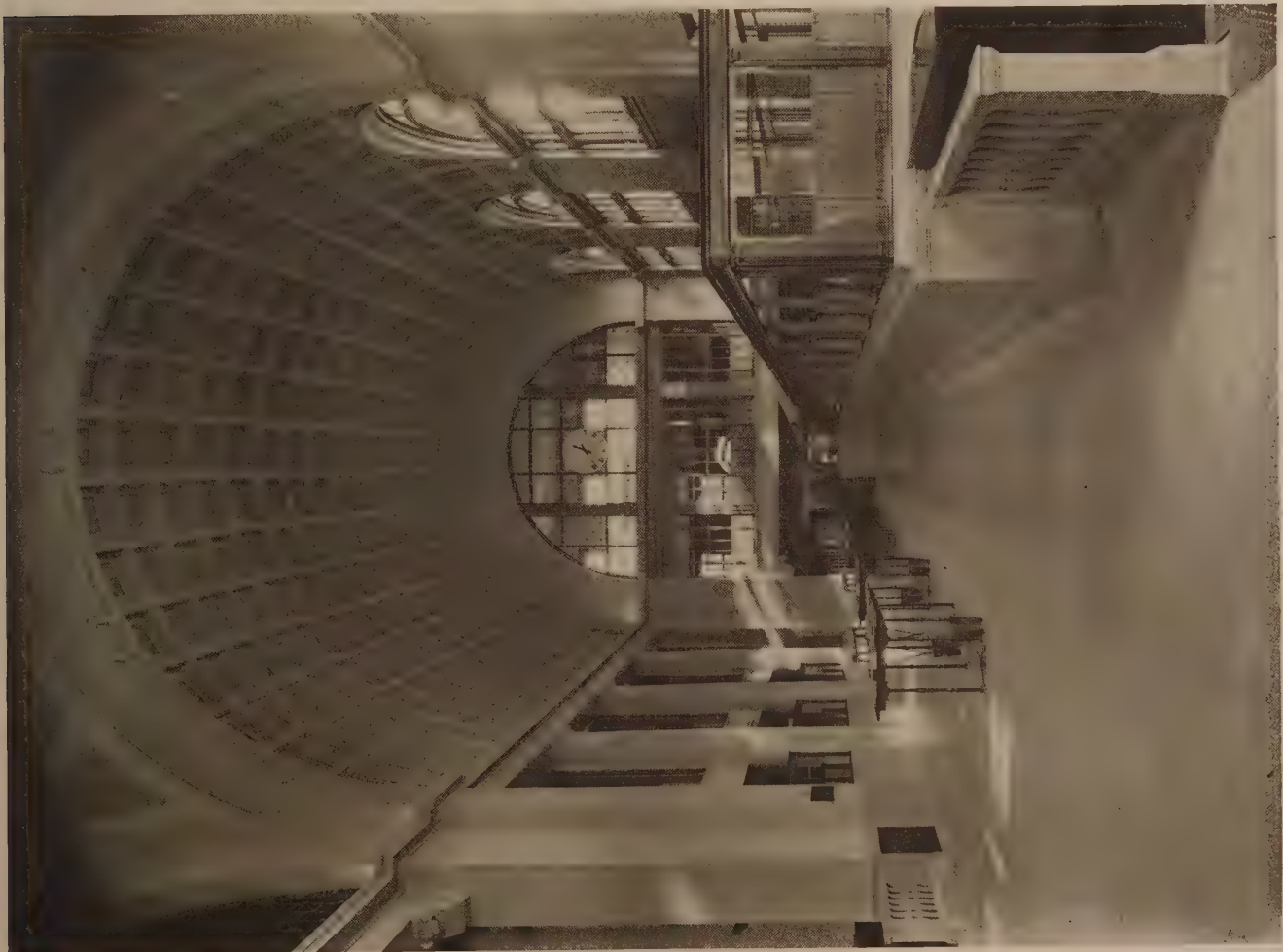
Dennison & Hiron, Architects.







Dennison & Hirons, Architects.



BANKING-ROOM, TOWARD VAULTS, THE MECHANICS BANK, NEW HAVEN, CONN.

# Mechanics Bank of New Haven

Dennison & Hiron, Architects

THE alteration of the Mechanics Bank of New Haven presented many interesting and difficult problems for the architects' consideration. The original bank building occupied a corner lot and faced on Church Street, covering an area of approximately twenty-eight hundred square feet. The banking-room was rectangular in form and occupied the central part of the building, being flanked at the front and rear by various offices and dependencies. Supported on four massive corner piers was a large dome, approximately thirty-three feet in diameter and rising to a height of forty-eight feet above the banking-room floor. The bays at the front and rear of the banking-room carried barrel vaults which penetrated the dome. These vaults were coffered with square coffers of heavy and crude design. The security vault was located at the rear of the banking-room.

To this existing building it was proposed to add an extension on the south and west. By the additions thus made, the area occupied by the remodelled building would be approximately seventy-five hundred square feet, whereas the area occupied by the original building was but about twenty-eight hundred square feet. The banking-room, under the new scheme, was to be given greatly enlarged quarters to meet the present-day needs of the bank. The work of planning and designing the architectural construction was given to Mr. Charles S. Palmer, architect, of New Haven. The remodelling and redesigning of the interior and equipment of the remodelled building throughout were awarded to Dennison & Hiron, architects.

This alteration work, as outlined above was carried out in the face of great difficulty, because the work had to be planned and executed while the bank was conducting its business in the building. The arrangements and adjustments which the architects were obliged to make in order to enable the construction work to progress with reasonable speed and at the same time to cause a minimum of inconvenience to the workers in the bank, needed constant and careful attention. That the work was executed to the satisfaction of the officials of the bank is testimony to the thoroughness with which the architects and builders planned their work.

The illustrations accompanying this article show the plan arrangement of the remodelled building and of the remodelled interiors of the bank. The new façades were designed to conform to the existing façades of the original building. Thus the width of the bays, the heights of the windows, and many other conditions were fixed, and the remodelling of the interior of the new portions of the building had necessarily to be worked out to meet these established conditions.

It will be noted that the domed and vaulted ceilings of the original building were retained, and that the new additional space given to the banking-room found an architectural expression consonant with the ample motifs of the original building. The barrel vault at the rear of the original banking-room was extended over the new area devoted to the public space. The coffers of the vault, however, were modified in form by the applications of mouldings and orna-

ment, this modification giving them a much needed refinement of character. The scagliola and painted surfaces of the walls of the original banking-room were removed and the walls refinished. The walls of the new addition were plastered throughout and painted with a warm, light grey color, giving a pleasing effect of simplicity and airiness.

To the left of the entrance is the president's alcove for the reception of customers. Adjacent to this alcove is the president's room. At the right of the vestibule entrance, is the officers' space. The banking-room proper extends the full length of the building. Under the barrel-vaulted section, the public space has a width of twenty feet and it is flanked on either side by the new banking screens. At the extreme end of the banking-room is the security vault, surmounted by a mezzanine gallery. The mezzanine story is carried over the working space behind the columns flanking one side of the public space. This mezzanine story is ventilated by forced ventilation. Adjacent to the security vault are the coupon booths and various dependencies.

The architectural treatment of the banking-room was given special attention. The new banking-room is of marble and bronze. The marble for the screen, the wainscot and the floor is Tavernelle. The bronze work of the screen, while delicately proportioned, is of sufficiently robust character to accord with the monumental proportions of the banking-room. The screen is equipped with upward and downward reflectors, this lighting system assuring the most satisfactory illumination, both for the banking-room and for the workers in the cages. During the daylight, the banking-room is lighted by the high-arched windows along the side and at the ends. The mezzanine story over the security vault is decoratively treated by the use of a cast-iron screen partition which forms an interesting motif for the termination of the vaulted space. The plaster walls of the banking-room are painted a soft, warm grey and the panels and coffers in the ceiling are given slightly different color-tones, this variation in color relieving the monotony of the large plaster wall surfaces.

The security vault at the extreme end of the banking-room has an interior floor area of approximately three hundred square feet, and contains two thousand safe-deposit boxes, with accommodations for additional boxes. Constructed of reinforced concrete, the vault is furnished with steel linings of the most approved type. The vault is electrically protected and it is constructed to be proof against burglars, fire, water, and other dangers. Polished steel grille gates of beautifully decorated design give further assurance that the vault is adequately protected. In addition to the electric protection given to the vault, a system of daylight hold-up stations is installed, with stations at the various wickets of the banking-screen. These, like the electric protection of the vault, are connected with the burglar-alarm box on the exterior of the building.

In the basement are located the silver and trunk storage vaults, the locker-room, storage facilities, boiler-room, and various dependencies.





The village hotel and street, Cramerton, N. C.

## Cramerton, North Carolina

### A Typical Model Modern Cotton-Mill Town

SOUTHERN textile manufacturers are intensely interested in the labor problem and are working out a civic code for industrial communities that shall appeal to the average man whether he be stockholder, manager, worker, or any other good citizen. It is felt that such a code would speedily become a *minimum policy* which all mill men would endeavor to put into effect in their communities. While a great deal of splendid work is being done in many mill communities, the leaders in the industry will not be satisfied until a certain *minimum standard* is achieved in practically all of them which shall make it a matter of pride to both employer and employee to proclaim to all the world that they are citizens of any cotton-mill village.

Progressive mill-owners, who were in the minority at first, looked into the future and saw what must inevitably happen. They began, among themselves, the task of making the mill villages better places in which to live, of giving, both in and out of the pay envelopes, to their workers a more adequate compensation for their labors. The movement grew and spread.

Then came the war boom, but, of larger importance, the war income-tax rates with their excess-profits taxes. Huge profits flowed to the manufacturers in the war and post-war days, and they were confronted with the alternative of paying to the Federal Treasury as high as 85 per cent of their profits or putting the surplus back into their plants.

They are not entitled to credit for altruistic motives, and they claim no credit for benevolent intentions. They began to see that mill workers who are healthy in mind and body and contented constitute a commercial asset. So they took surplus profits to a very considerable degree, and put them back, not merely in plant improvements but in improvements to villages. They provided better schools and better churches. They installed modern plumbing and sewerage in mill homes. They went in extensively for furnishing educational and recreational facilities. They reached down into the younger generations and saw that they got sound instruction in personal hygiene and in domestic science.

Excess-profits taxes have now been reduced, but the

improvement in living conditions in mill villages continues. It is true that there are villages in the Southern States still in the primitive stages, but they are the exception—not the rule. All of the new villages are modern and thoroughly well-equipped. In the better of them really beautiful effects have been achieved by the town-planners. The mill architects are getting away from uniformity in coloring and design of the houses.

Community houses, libraries, local baseball leagues, girls' basket-ball teams, the Boy Scouts and the Girl Scouts movements all flourish, the movies are found everywhere, and every encouragement is given to help the people to obtain a greater degree of beauty and real happiness from life.

Now, here is a definite, concrete proposition, representative of a thousand or more cases embracing the very large majority of Southern cotton-mill communities and, with slight modifications, typical of them all. Even when such communities are within the limits of incorporated towns, they are usually outlying and of this same general type. The feature about these mill villages which is most open to criticism is the ownership of the dwellings so largely by the corporations. Observation proves that most mill operatives want so much to live near their work that it is well-nigh impossible to sell them homes except very near the mills; and the experience of many who have risked doing that has been that when sold such houses do not long furnish operatives for the mill but are in demand by petty tradesmen and others, thereby defeating the very object for which they are built near the mills, to the disadvantage of both the corporation and the operatives. It is to the best interest of everybody concerned that the dwellings nearest the mills continue under mill ownership and that those who can be induced to invest in homes take locations farther away, the disadvantage in distance being offset by the larger plots available and the other well-known advantages of home-owning and home-building. The migratory instincts of many will have to be overcome before home-ownership is likely to become the rule; perhaps education and training will furnish the answer.



Public school.



The mill offices.

CRAMARTON, N. C.

Chas. C. Hook, Architect.





The Methodist Church.

CRAMERTON, N. C.

Chas. C. Hook, Architect.



A typical residence.



The Baptist Church.

Cramerton actually is a model village, but one, it is only fair to say, whose high standard of excellence is matched now in many other places in the South. Stuart W. Cramer of Charlotte, N. C., was former president of the American Association of Cotton Manufacturers and is one of the ablest leaders of the industry in the South. Mr. Cramer is a native North Carolinian, graduate of the U. S. Naval Academy, who early resigned from the service to engage in engineering and the construction of cotton-mills, and was the engineer who designed the plant originally. He soon bought out the entire plant in order to carry out his own ideas of a model industrial community.

The village of Cramerton is situated at an altitude about six hundred feet above sea-level; almost surrounded by the South Fork of the Catawba River in a huge horseshoe; flanked by two small mountains about one thousand feet above sea-level; tract containing nearly three thousand acres.

Present population about three thousand five hundred; between six hundred and seven hundred dwellings; modern water-works with filtration and purification, in addition to the thirteen deep wells. Not a building of any sort where people inhabit or work without water, sewerage, and electric lights. Nearly two hundred garages for the operatives.

Village equipment consists of real estate, improved

streets and sidewalks, dwellings, hotel, gardens, schools, churches, halls, welfare buildings of the Y. W. C. A. and Y. M. C. A. type, athletic field, parks, electric lights, water-works (thirteen deep wells), and sewer system. The architect of the principal buildings is Chas. C. Hook, of Charlotte.

No rent is charged, only a nominal charge of twenty-five cents per room per week for electric lights, water-works, and sewerage.

No rent was received on the hotel, as it was leased with the understanding that rates were to be made to the operatives accordingly.

A modern dairy and orchard is operated at cost, with several thousand chickens, so that with cheap day-old fresh eggs, pure milk, pure water, and sanitary conditions, sickness is the exception and health the rule.

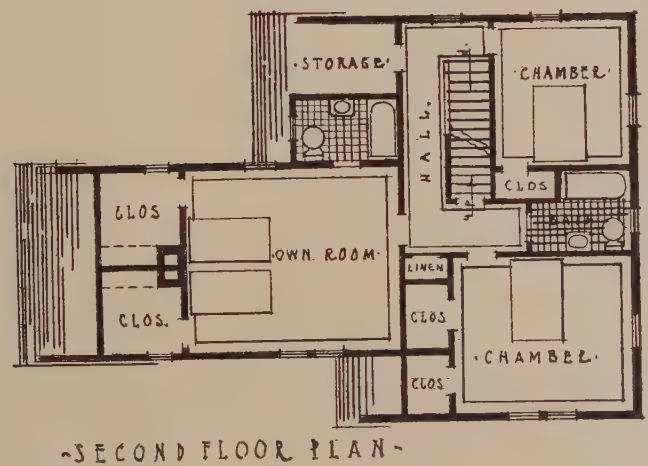
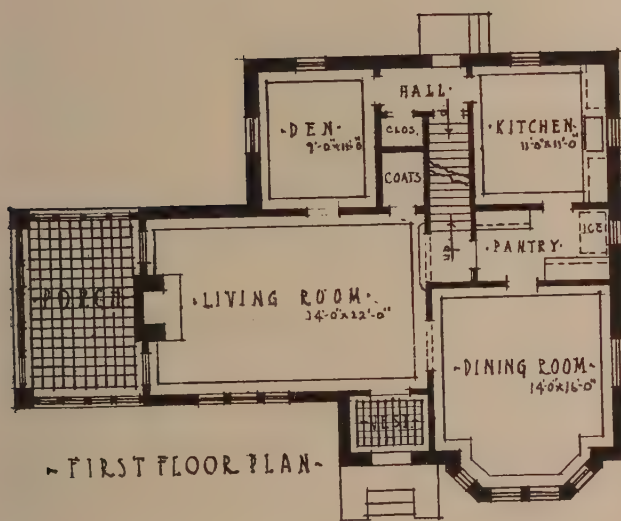
The company runs an ice-plant and cold storage for the operatives, but no stores. The stores are modern and well-supplied and the proprietors are under the mill supervision, to insure low prices and good quality.

The general civic planning and working out of the industrial plant as a whole is not only a successful financial venture with the owner, but is a hobby and recreation—likewise the welfare and community work, the sociological features, etc.



A street of houses for mill workers. Cramerton, N. C.

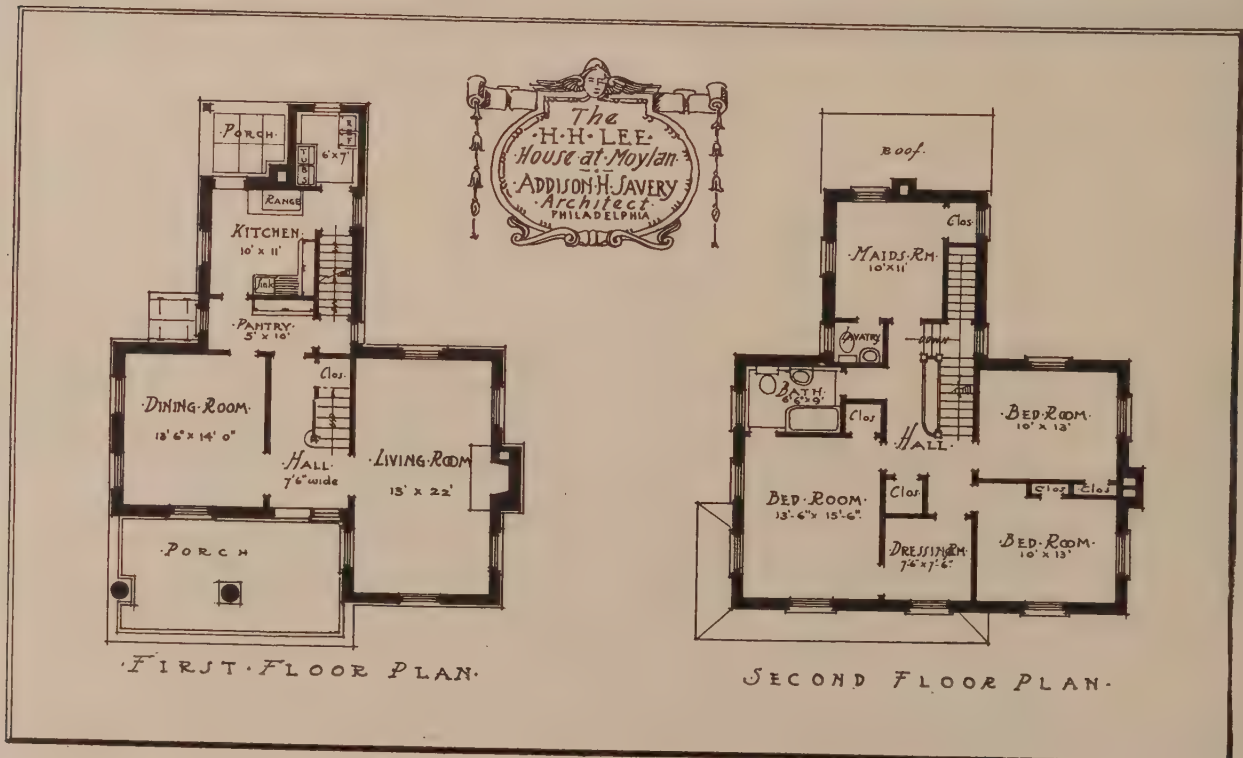




HOUSE, H. A. DAMMEYER, NEW ROCHELLE, N. Y.

Frank Wyatt Woods, Architect.







# A Manual of Office Practice

By Frederick J. Adams, A. I. A.

## FIFTH ARTICLE

### FORMS

Form No. 1, Authorization. Form No. 2, Short contract. Form No. 3, General contract order. Form No. 4, Subcontract order. Form No. 5, Drawing receipt. Form No. 6, Shop drawing receipt. Form No. 7, Request for estimate. Form No. 7A, Bid form. Form No. 8, Drawing schedule. Form No. 9, Change record. Form No. 10, Progress report (short form). Form No. 11, Progress report (long form); Instructions for preparation and use; Items for report. Form No. 12, Building programme. Form No. 12A, Drawing programme. Form No. 13, Indication sheet. Form No. 14, Schedule, floor, wall, and ceiling finish. Form No. 15, Operation record.

The more important considerations governing the use of prepared forms are as follows:

To establish a definite and common understanding between the interested parties, through the use of the same phraseology or formation in dealing with each recurrence of similar incidents.

To provide guides or models which will facilitate the use of similar phraseology or formation in dealing with similar incidents.

To help inexperience to accomplish results which would not be within its capacity, without the help of a guide or model.

To secure the economy possible through prior preparation and volume production of the fixed quantities involved in dealing with a series of similar incidents.

Forms or their equivalents are a means and not an end. Of more importance than any business economy which may be effected through the use of the method is the training in orderly, accurate, and consistent conduct and statement. Such training cannot fail to be of real advantage in all the other phases of the architect's work.

The ends to be sought in the handling of any business detail are accuracy, speed, intelligence, and, last but not least, dignity. Dignity is just as important in this connection as in any other phase of the architect's work; therefore, sloppiness in the preparation or use of forms must be sedulously avoided.

All forms and models and their subject-matter should be given periodical scrutiny, to make sure that the purpose of each continues to be served to the best advantage.

Avoid the inclusion of unnecessary or duplicate matter and use only for conveying information which cannot be given in some simpler or more economical manner.

Skeleton type forms should be arranged to permit insertions to be made on the typewriter, and of letter-file size, or if larger to fold to file size.

Standardizing the forms to letter-file or similar unit size facilitates the time-saving loose-leaf binder system, of keeping the important documents of a current operation available for quick reference.

Where two or more sheets of the same form are used in a particular case, care must be taken that each sheet indicates what part it is of the whole, as Sheet 2 of 6, Page 3 of 5, etc.

Economy in handling volume of work should be the deciding factor as to the use of printed forms, except in the

case of a contract form where the formality of print is a practical necessity.

Where forms are printed the use of distinctive colors facilitates handling and filing.

### AUTHORIZATION

Form No. 1.

Instructions 32-41-55.

#### BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. Jones Residence, Cal...ton, Mass.*

Subject *General estimates.*

Date, 1/9/20. No. 1 (A, B, C).

*John H. Jones, Esq.,  
Cal...ton, Mass.*

DEAR SIR: We are in receipt of estimates as follows for furnishing all labor and material required for the completion, in accordance with the drawings and specifications, of:

A—House, exclusive of finish of Living and Dining Rooms.

B—Terraces, garden, etc.

C—Garage.

BIDDER	AMOUNT			TIME	
	A	B	C	Total	
Over...k Const. Co.	\$120,650	\$19,350	\$10,000	\$150,000	6 Mos.
Mas...t Bldg. Co.	124,000	18,500	9,500	152,000	7½ Mos.
Lir...s Const. Co.	128,500	20,500	10,500	159,500	8 Mos.
Da...s & Da...s	Actual cost plus 7½%, total cost guaranteed not to exceed \$160,000. Time, 8 Mos.				

Recommendation. *We recommend that a contract to include items A, B, and C, with completion guaranteed in 6 months, be awarded to the Over...k Const. Co. in the total sum of \$150,000.*

(Signed) BLANK & BLANK.

Accepted Jan. 13, 1920.

" JOHN H. JONES.

Owner is requested to signify acceptance where indicated, returning the original to the architects, retaining the duplicate for his file.

Form No. 2 SHORT CONTRACT Instruction 36

#### BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. Jones Residence, Cal...ton, Mass.*

Subject *Special finish, Living and Dining Rooms.*

Date 2624620.

*Over...k Construction Company,  
Baltimore, Maryland.*

Your proposal dated Feb. 21, 1920 for furnishing and setting in place, complete, all rough carpentry, cabinetwork, hardware, glazing, decoration, etc., in the Living and Dining Rooms, including furnishing of models of all ornament for approval, all as referred to and described more fully on drawings No. 27 and No. 28, both revised to 2/15/20, and on pages No. 4 to 7 inclusive of Memorandum Specification dated 2/15/20, completion guaranteed on or before August 15, 1920.

All in accordance with the drawings, specifications, and instructions of the architects, is hereby accepted in the sum of  
*Two thousand five hundred dollars* \$2500.00

Terms of payment: *Upon the certificate of the architects as the work progresses in place.*

Except as noted above, this order is subject to all the requirements of the STANDARD CONTRACT AND GENERAL CONDITIONS on file in the architects' office, the terms of which and of this order are binding upon the parties accepting hereunder as evidenced by their respective signatures.

Accepted (Signed) *J. H. Jones* Date *Feb. 26, 1920*

Accepted *Over...k Construction Company, Feb. 24, 1920*  
 (Signed) by *W. J. W...b, President.*

Original and duplicate to be signed by the contractor and returned to the architects for signature by the owner. When so signed the original to be sent to the contractor, the owner retaining the duplicate for his file.

### GENERAL CONTRACT ORDER

Form No. 3

Instruction 41

#### BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. J...s Residence, Cal...ton, Mass.*

Subject *Special finish, Living and Dining Rooms.*

Date *2/24/20.*

*Over...k Construction Company,*  
*Baltimore, Maryland.*

You are hereby authorized to <sup>add to—deduct from</sup> add to your contract dated *Jan. 15, 1920* the sum of *\$2500.00* as per your estimate of *Feb. 21, 1920*, for *furnishing and setting in place, complete, all rough carpentry, cabinetwork, hardware, glazing, decoration, etc., including models of all ornament, all as referred to and described more fully on drawings No. 27 and No. 28, both revised to 2/15/20, and on pages No. 4 to 7 inclusive of Memorandum Specification dated 2/15/20.*

*Completion guaranteed on or before August 15, 1920.*

*Note.—It is understood and agreed that the special date of completion for the work included in this order is not to be held to modify or prejudice the owner's rights to completion of the work at present under contract, at the date mentioned therein.*

*Note.—This change was authorized by J. H. J...s under date of Feb. 23, 1920.*

Except as noted above, this order becomes part of the contract, and is subject to all the requirements of same including the GENERAL CONDITIONS, and to the GENERAL SPECIFICATIONS so far as the same are applicable to the work or material to be furnished under this order.

Yours truly,

(Signed) BLANK & BLANK.

per

Duplicate for owner's file.

Form No. 4 SUBCONTRACT ORDER

#### BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. J...s Residence, Cal...ton, Mass.*

Subject *Cabinetwork, carpentry, Living and Dining Rooms.*

Date *2/26/20. No. A 1.*

*Over...k Construction Company,*  
*Baltimore, Maryland.*

You are hereby authorized to <sup>award contract—issue extra or credit order</sup> issue extra order to

*Bar...n Woodwork Co. for Cabinetwork, etc.,*  
 name of subcontractor kind of work  
 as per your estimate dated *2/21/20* \$2500.00

Description of work: *furnishing and setting in place, complete, in Living and Dining Rooms, all rough carpentry, cabinetwork, consisting of dado, wainscot, cornice, mantels, etc., all in quartered white oak, ornament to be hand-carved, and including setting of hardware to be furnished by others, all as referred to and described more fully on drawings No. 27 and No. 28 both revised to 2/15/20, and on pages No. 4 to 7 inclusive of Memorandum Specification for finish dated 2/15/20.*

*Completion guaranteed on or before July 25, 1920.*

Except as otherwise noted above, this order becomes a part of the contract, and is subject to all the requirements of same including the GENERAL CONDITIONS, and to the GENERAL SPECIFICATIONS, so far as the same are applicable to the work or material to be furnished under this order.

Yours truly,

(Signed) BLANK & BLANK.

per

Duplicate for owner's file.

Form No. 5 DRAWING RECEIPT Instruction 49

#### BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. J...s Residence, Cal...ton, Mass.*

Subject *General drawings.*

Date *January 21, 1920.*

*Over...k Construction Company,*  
*Baltimore, Maryland.*

We issue herewith the following drawings for action indicated:

COPIES	NO.	DATE	SCALE	TITLE	INSTRUCTIONS
3	1	11/1/19	1/8	Foundation plan	for construction
2	1	11/1/19	1/8	Basement plan	for construction
3	3	11/1/19	1/8	First-floor plan	for construction
1	—	6/5/19	40 ft. to in.	Survey	for information
1	9	11/2/19	1/4	Terrace plan	as requested

Yours truly,

BLANK & BLANK.

per

Duplicate to be signed and dated as a receipt and acknowledgment of instructions received, and returned to the architects' office as soon as possible.

Received.....Date.....

### SHOP DRAWING RECEIPT

Form No. 6

Instructions 49-51

#### BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. J...s Residence, Cal...ton, Mass.*

Subject *Cabinetwork.*

Date *3/5/20.*

*Over...k Construction Company,*  
*Baltimore, Maryland.*

We issue herewith the following shop drawings for action indicated:



COPIES	NO.	DATE	SCALE	TITLE	INSTRUCTIONS
1	2	3/2/20	3/4	Dining-Room	Returned for
				South wall	correction
1	3	3/2/20	3/4	North wall	Approved with
					corrections noted
2	4	3/2/20	3/4	West wall	Approved

Yours truly,

BLANK & BLANK.  
per

Architects' notes:

"Returned for correction" indicates drawing is to be revised and resubmitted.

"Approved with corrections noted" indicates contractor or subcontractor may proceed with the work as corrected, pending submission of revised copy for final approval.

"Approved for design" indicates final action by the architects. Copies of the drawing should then be distributed to the trades affected. Approval by the architects of any measurements or arrangement does not relieve the contractor or subcontractor of his responsibility to verify all conditions affecting his work.

Duplicate herewith to be signed and dated as a receipt and acknowledgment of instructions, and returned to the architects' office as soon as possible.

Received.....Date.....

# REQUEST FOR ESTIMATE

Form No. 7

Instruction 28

BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. J. . . . s Residence, Cal. . . . ton, Mass.*

Subject *General estimates.*

Date *12/31/19. No. 1 (A, B, C).*

*Over . . . k Construction Company,  
Baltimore, Maryland.*

You are requested to submit estimates for work as indicated briefly below, and as shown and described more fully on accompanying drawings and specifications, *on or before Jan. 8, 1920.*

Kind of work: *General works of residence, terrace, garden, and garage, at Cal. . . . ton, Mass.*

Drawings, etc.: *No. 1 to 14 inclusive, 17, 18, schedule of floor, wall and ceiling finish, general specifications, survey.*

Form of bid: *A—Furnishing all labor and material required in construction and completion of the house, exclusive of the finish work in Living and Dining Rooms, in the sum of*

*B—Furnishing all labor and material required in the construction and completion of terrace, garden, etc., in the sum of*

*C—Furnishing all labor and material required in the construction and completion of garage, in the sum of*

*Note: Surety bond will be required in the sum of one-half the contract awarded.*

Bidder must state time to complete in number of working days or by fixed date.

Estimate must show clearly any variation from the required form of bid.

Estimate is subject to all the requirements of the STANDARD CONTRACT AND GENERAL CONDITIONS on file in the architects' office, and the right is reserved by them to reject any or all bids.

Estimate must be submitted in duplicate on accompanying forms, each copy to be properly signed by bidder, and both enclosed in a sealed envelope indorsed on outside.

Estimate for *J. H. J. . . . s Residence, etc.*

Yours truly,

BLANK & BLANK.  
per

Form No. 7A

BID FORM

Instruction 29

BLANK & BLANK, ARCHITECTS

1001 Battery Place, New York, N. Y.

Project *J. H. J. . . . s Residence.*

Subject *General estimates.*

Date *1/8/20. No. 1 (A, B, C).*

DEAR SIRs:

I, We propose to complete the work described below, in accordance with your drawings, specifications, and instructions, for the *General works*.....

work  
of house, terrace, garden, garage, at *Cal. . . . ton, Mass.*  
building address

for the sum of (see below) \$

*A—Furnishing all labor and material required in construction and completion of the house, exclusive of finish work in Living and Dining Rooms, in the sum of*

*One hundred twenty thousand six hundred fifty dollars*  
\$120,650.00

*B—Furnishing all labor and material required in construction and completion of terrace, garden, etc., in the sum of*

*Nineteen thousand three hundred fifty dollars*  
\$19,350.00

*C—Furnishing all labor and material required in the construction and completion of the garage, in the sum of*

*Ten thousand dollars*  
\$10,000.00

*If awarded the contract we will furnish surety bond as required.*

*We will guarantee to complete the work in six months from date of contract, subject to delays caused by strikes or other causes beyond our control.*

*Our bid is based upon all the work being included in one contract.*

*We will allow the following amounts for material if furnished by the owner:*

*Building sand, screened, \$1.00 per yd. delivered at site.*

*Foundation rubble, delivered at site, \$2.00 per yard measured in completed wall.*

*Time to complete (see above)*

number of days or by fixed date

Except as otherwise noted above, this estimate is subject to all the requirements of the STANDARD CONTRACT AND GENERAL CONDITIONS on file in the architects' office.

Respectfully yours,

*Over . . . k Construction Company,  
by W. J. W. . . . b, President.*





# Construction of the Apartment-House

By *H. Vandervoort Walsh*

Professor of Construction, School of Architecture, Columbia University, New York City

## ARTICLE XIX

### WATER SUPPLY

THE details of any system of water supply for apartment houses depend upon the size and location of the building, the city water pressure available, and character of the apartment, whether it is to be a middle-class walk-up or a high-class elevator apartment. In New York City, the water pressure is great enough to supply water on all floors in non-fireproof buildings five stories or less, but roof-tanks are necessary in the tall fireproof buildings to give the necessary pressure on the upper floors, although the lower four stories receive city pressure. However, the pressure on the hot-water lines for the lower stories comes from the roof tank. There is some variation in the custom of providing roof-tanks, but generally one tank is used, part of which is arranged to carry the legal amount of water for the stand-pipe lines, and the rest the quantity needed for the house supply. Wooden tanks are more generally erected on account of their lower cost, but we have noted quite a number of steel tanks being erected on very large apartments. The installation of tanks on the roof calls also for pumps in the basement. A house-pump, and often two house-pumps for emergency and a fire-pump are the usual

equipment, these being placed in a pump-room in the basement as directly under the roof tank as is possible, so that when pumping goes on the minimum of noises in the pipes will be developed. Pump-rooms that are not under the roof-tank but so located that the risers from pump to tank have to be offset at a sharp angle are unsatisfactory, since the noise of pumping in the pipes is exaggerated. Offset angles ought never to be more than forty-five degrees.

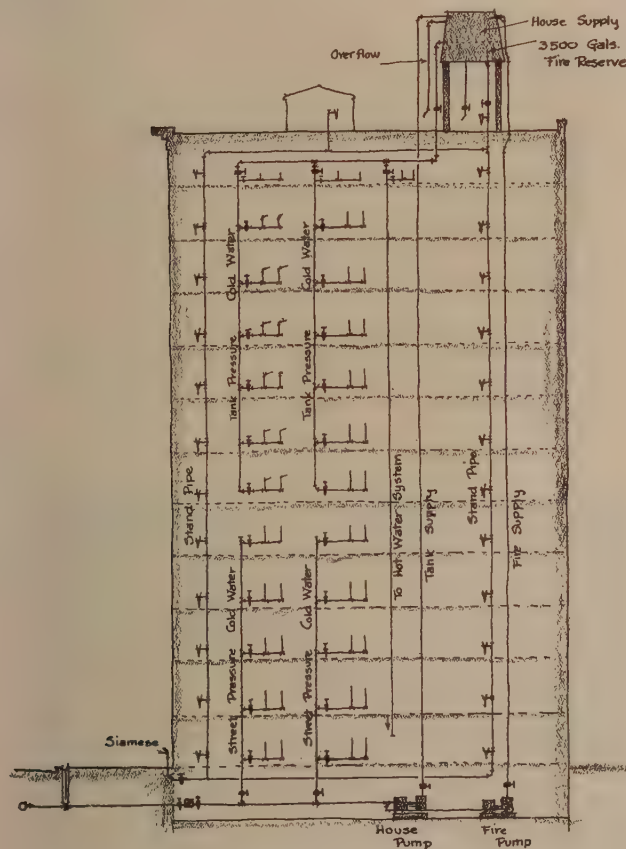
The character of the equipment for hot-water distribution depends a good deal upon the size of the building. In most cases a hot-water heater that is fired with coal is hooked up with one or two boilers. Sometimes an auxiliary heater is connected with works in connection with the main house heating boilers. Both boilers and heaters are thoroughly covered with insulation, but there is no uniform practice of insulating the hot-water distributing lines. Some apartments have these well protected, while others have them entirely exposed, even in the cellar.

Good practice calls for the installation of the loop system of hot-water distribution, but this is not generally found in medium-class buildings. The loop consists of a large circulating pipe in which the water constantly rises from and returns to the boiler. Short branch pipes run from it to the various fixtures, and hot water is quickly tapped, because the main supply pipe is always filled with it. When the loop circulation is not installed, there are times, after periods of rest when no fixtures are used, that it takes a few minutes to tap the hot water, for the cold water in the pipe from the fixture to the boiler must be run off first. This is not good service.

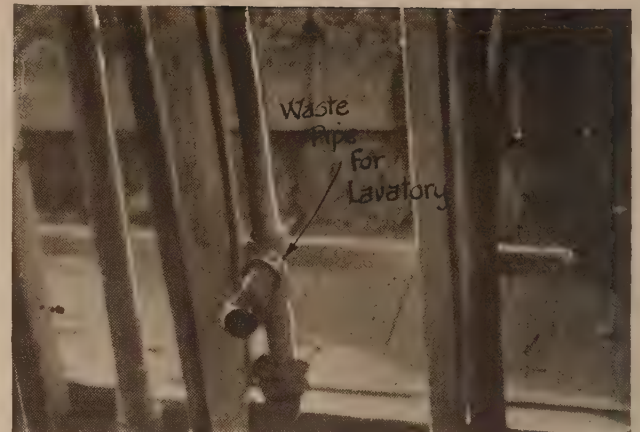
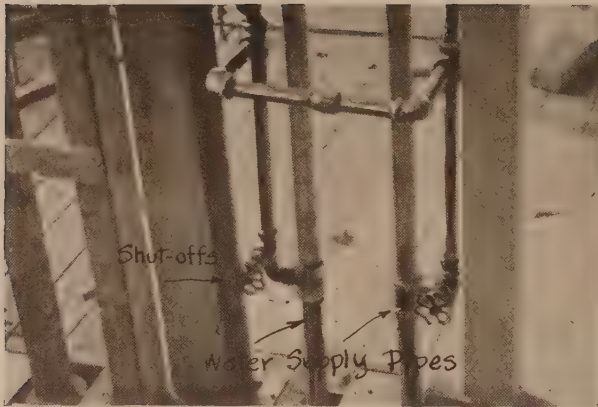
Another bad feature which we have often noticed is the crowding together of hot- and cold-water risers. Never should they be placed nearer than six inches. It is exasperating to find the cold water always luke warm because of its nearness to the hot-water pipe.

Another very important feature in the supply system is the installation of plenty of shut-off valves, so that all parts can be controlled in any emergency. A large gate-valve is placed at the entrance of the supply pipe to the building, and shut-offs are located at the terminal lines of supply to hot-water boiler, house-heating boiler, pumps, and similar places. Important riser lines and long horizontal runs should also be controlled by valves. At every floor in every kitchen and in every bathroom, shut-offs should be located so that both hot and cold water can be cut off from the fixtures in the room, should some faucet need repairing.

It is desirable to have all of the supply pipes so pitched that their contents of water, when the supply is shut off, can be drained out. Then, too, faucet connections and riser lines from dead-ends should not be taken from the termination of the pipe but from the side, the pipe being carried beyond the point of the connection a few inches, to allow for an air cushion that will reduce the noises of water hammer produced by the opening and shutting of faucets on the fixtures.



SIMPLIFIED COLD WATER SUPPLY SYSTEM



Where so many apartments are built on the basis of speculation, and the builders count on unloading them to a buyer after a few years, they are not keen about putting in brass supply lines, for they are not much interested in the cost of maintenance. However, large projects, built for investment, do have, more often, brass pipes installed in them. It is customary in these buildings to use brass pipe for the hot-water circulating system, and galvanized iron pipe for the cold-water.

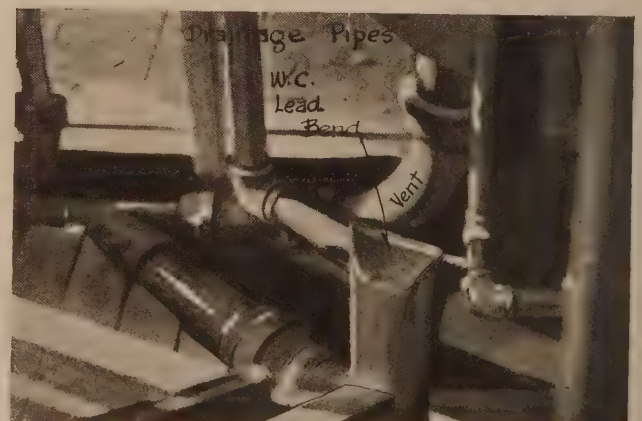
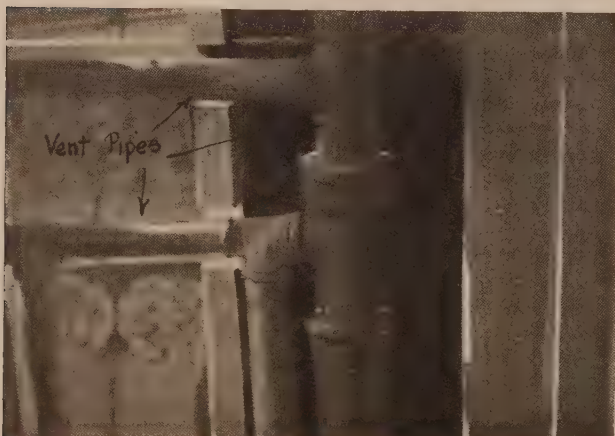
But whatever materials are used, the sizes of the supply pipes in apartments ought to be considered more carefully than they are. Quite often, especially in the medium-class apartments, they are selected by rules of the thumb. A 2- or 3-inch supply line to the building is chosen without much real knowledge, whether it will be adequate or not. The sizes of branch pipes for different fixtures have become quite well standardized, and we list these in the following table:

FIXTURE	PIPE SIZE	GALLONS PER MINUTE (COLD WATER)
Kitchen-sink.....	$\frac{3}{4}$ inch	15
Laundry-tub.....	$\frac{3}{4}$ inch	15
Bathtubs.....	$\frac{3}{4}$ inch	15
Showers.....	$\frac{1}{2}$ inch	8
Lavatories.....	$\frac{1}{2}$ inch	4
Flush-valves on water-closets.....	1 inch	30

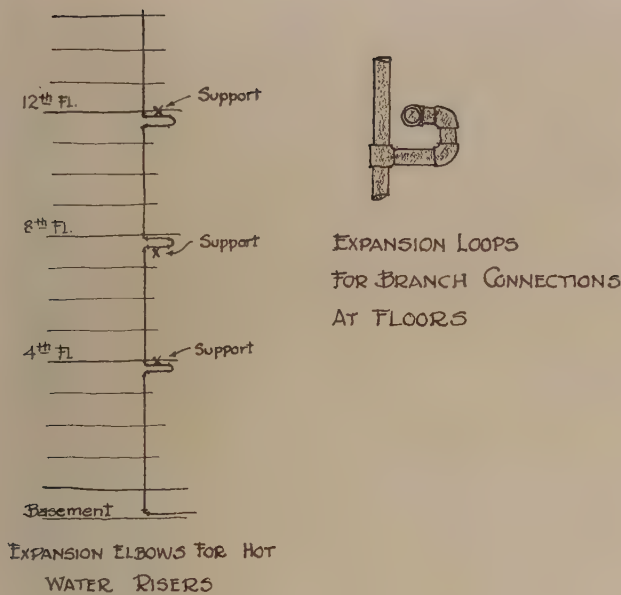
Now a very convenient rule for determining the size of the main supply lines has been developed by Mr. Walter S. Timmis, which we condense from "The Guide" (1922) of the American Society of Heating and Ventilating Engineers. The quantity of cold water is estimated for each floor by adding together the quantity required for each fixture to be supplied by the riser on that floor. Beginning with the top floor, only 60 per cent of this quantity is taken in estimating the pipe sizes. For example, suppose that all of the fixtures on the top floor required 100 gallons per minute, then 60 per cent, or 60 gallons, would be used for selecting the pipe size. Now, if we assume that the top-floor fixture is to have a pressure of 15 pounds, which means that the tank must be placed 35 feet above the highest fixture, and then we assume that the desirable pressure drop is 10 pounds per 100 feet of length of pipe, the following sizes of pipes are capable of delivering the quantity listed below:

PIPE	GALLONS PER MINUTE
$\frac{3}{4}$ inch.....	76
1 inch.....	15
$1\frac{1}{4}$ inches.....	27
$1\frac{1}{2}$ inches.....	43
2 inches.....	88
$2\frac{1}{2}$ inches.....	154
3 inches.....	242
$3\frac{1}{2}$ inches.....	357
4 inches.....	499

From the above table, it will be seen that, in order to estimate on 60 gallons for the top floor, the 2-inch pipe will have to be chosen.







Now the next floor down will also have fixtures requiring 100 gallons per minute, and the pipe will have to be large enough to supply this floor and the one above. In getting at the number of gallons to be used in selecting the size of pipe, the total number of gallons for this and the floor above is found, which would be 200 gallons, and then 60 per cent of this is taken, which would be 120 gallons. This is further reduced by 10 per cent, or only 90 per cent of the 120 gallons. Thus, 108 gallons are used to select the pipe. By referring to the table, it will be found that a 2½-inch pipe is required.

This procedure is followed for every floor. Always 60 per cent is taken of the total number of gallons required down to that floor, and then this quantity is reduced by 10 per cent for each floor below the top. Thus for the floor below the top, one only 90 per cent would be used, then for the next lower 80 per cent, then 70 per cent, then 60 per cent, then 50 per cent, then 40 per cent, and so on down. No further reduction is made below 40 per cent.

As was previously stated, the tanks should be placed 35 feet above the highest fixture in order to give the necessary 15 pounds pressure, but sometimes they are set much lower. The sizes of these tanks vary a good deal, but usually for the average-size fire-proof apartment a 14,000 to 15,000-gallon tank is selected, 3,500 gallons of which are reserved for the standpipe lines. The law, once, in New York allowed the supply pipe to the fixtures to be carried up inside of the tank, high enough to maintain the level necessary for the reserve of 3,500 gallons. These pipes were found to be cut off, after the building had been erected, so that the pumps would not have to keep this reserve water for the fire lines. Now the law requires the connection for the house supply pipe to be made on the outside of the tank, thus insuring the legal reserve of water for fire.

All the tank connections are carefully covered by 3 inches' thickness of fibrous, insulating quilt to protect against freezing, and these are boxed in with wood. The tanks, themselves, are roofed over. Overflow pipes, 4 inches in diameter, are brought down to about 6 inches above the roof, and spill out on it.

As with the cold-water supply, some estimate must be made concerning the quantity of hot water needed. There

are many existing tables giving this information, and they vary a great deal. We quote one of the best estimates for apartments here:

FIXTURES	GALLONS PER HOUR
Lavatories.....	3
Bath tubs.....	15
Foot basin.....	3
Kitchen sink.....	10
Laundry tubs.....	25
Pantry sinks.....	10
Showers.....	100
Slop sinks.....	20

The storage-tank for the hot water must be large enough to take care of the greatest demand, which is usually in the early hours of the morning. The per cent of the total amount of water for all fixtures that is apt to be drawn at this peak demand is about 35 per cent.

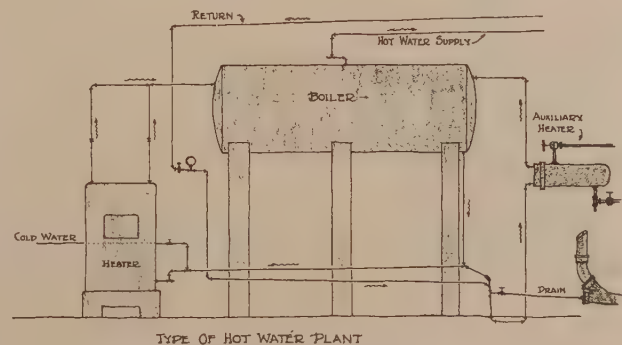
Another method of calculating the hot-water demand for apartments is to estimate the number of gallons required by each family per hour. Buildings having twenty-five or less families should supply 35 gallons of hot water per family; those having from twenty-five to thirty families should supply 30 gallons; those from fifty to seventy-five families, 25 gallons; from seventy-five to one hundred families, 20 gallons; and over one hundred families, 15 gallons.

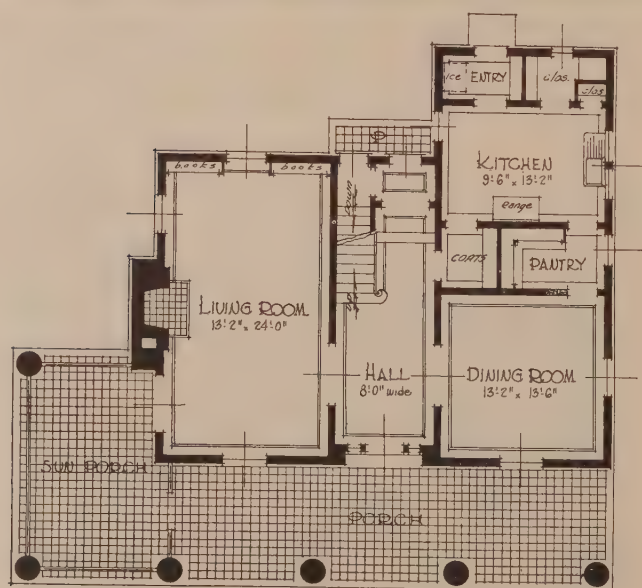
As we previously stated, the storage boilers are hooked up to a hot-water heater that operates by coal, and in some cases oil. The size of these heaters is usually computed on basis of grate area. The quantity of hot water required of the heater per hour is calculated from the known conditions of demand in the building. This total number of gallons is converted into pounds of water by multiplying by 8½. The difference between the temperature of the entering water and that of the heated water is usually assumed for purposes of calculation to be the difference between 50 degrees and 180 degrees, or 130 degrees. The number of British thermal units assumed to be available from the coal burned in the heater is 12,000 per pound of coal, and it is estimated that about 5 pounds of coal per hour will be burned on one square foot of grate. The efficiency of the average heater is about 65 per cent. Then the size of the grate for the heater in square feet will equal

$$\frac{\text{Required number pounds water} \times 130}{12,000 \times .65 \times 5}$$

Auxiliary heaters are sometimes added to the equipment. These receive their heat from the main house-heating boiler, and are connected below its water-line. The

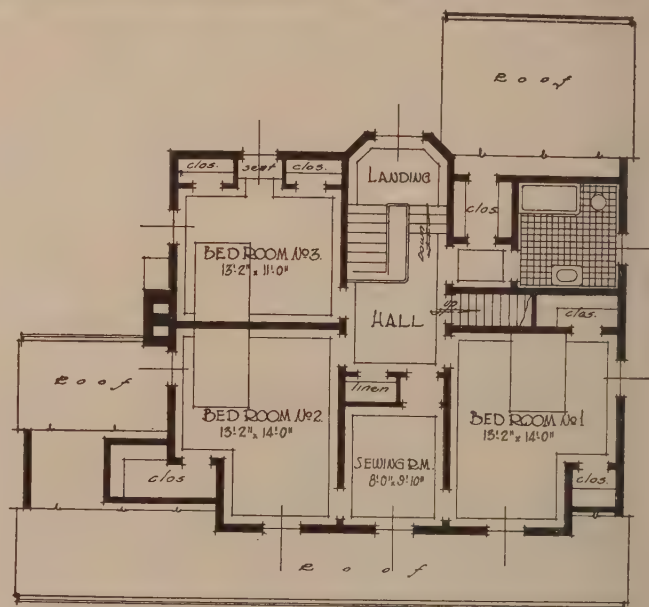
(Continued on page 293)





FIRST FLOOR PLAN

HOUSE, CHARLES F. HARWOOD, TENAFLY, N. J.



SECOND FLOOR PLAN

R. C. Hunter &amp; Bro., Architects.



(Continued from page 291)

water in the house-heating boiler circulates through it, and around the water-pipe coils placed inside, and even when the fires are low a certain amount of heat is given to the hot-water system.

The common size of boilers for storage purposes of apartment-houses having eighteen to twenty-five families, is 500 gallons, which measures about  $9\frac{1}{2}$  feet length by 3 feet diameter. For larger buildings, 800-gallon tanks are often used, or two 500-gallon tanks. The actual size of the storage tank needed can be computed by adding together the total quantity of hot water needed per hour by all fixtures, and then taking 35 per cent of this, since this will be the maximum demand at any one time. For example, the average apartment has one lavatory, bath-tub, kitchen sink, and laundry tub. Estimating on the basis of fixtures, 53 gallons per hour will be in demand, but only 35 per cent of this will be used at any one time, or  $18\frac{1}{2}$ , (say 19) gallons per apartment. If there are forty apartments, this means that a tank having a capacity of 760 gallons should be installed. Probably an 800-gallon tank would be selected.

Another important part of the water supply system in fire-proof apartments is that the standpipe equipment reserve tank, capable of holding 3,500 gallons, must be located at least 20 feet above the roof. This, as was previously stated, is usually the lower part of the general house-tank. Fire-pumps in the cellar, capable of delivering 65 gallons per minute, are connected with the tank by a 2-inch diameter pipe. A similar-sized overflow pipe terminates over the roof, and a 4-inch emergency drain-pipe with a valve is set at the bottom of the tank.

Leading down from the tank are riser lines, placed in the stair-wells, and located so that all parts of the building on each floor can be controlled by 100-foot length hose, having a water stream of 10 feet. The size of these risers depends upon the height of the building. When the apartment is less than 150 feet high, 4-inch diameter risers may be used; but if it is 150 to 250 feet high, 6-inch risers are needed. The hose outlets are  $2\frac{1}{2}$ -inch diameter, and set 5 feet above the floor. Roof hose connections are placed about 18 inches above the floor, and preferably in a heated penthouse. On the street a Siamese connection is made for the fire-engine pumps. The main pipe leading from this to the system is 4 inches when only one 4-inch riser is installed, 5 inches when two 4-inch risers or more are used, and 6 inches for 6-inch risers.

(To be continued.)

## Forest Fires Being Studied

IN recent observations of the effects of forest fires made by the Appalachian Forest Experiment Station at Asheville, N. C., on permanent study plots established in an area burned in November, 1922, it was found that, although many trees may not finally die because of the fire, the scar caused by the fire permits insects and fungi to attack the wood direct, and in a few years' time, after the bark has dropped off, the lower portion of the stem at least will be worthless because wormy or rotten. These open fire scars, too, pave the way for more severe damage by the second fire, as the old dead wood burns readily, while the bark is more fire-resistant and does not ignite so readily. Repeated fires of this kind finally weaken the tree and it is destroyed. Some of the pines completely defoliated by the fire put out new leaves, but many of these apparently still alive will later succumb because of too small crowns and leaf area as well as a complete killing of the cambium. Scrub-pine suffered more severely from the fire than either pitch-pine or shortleaf-pine. Many hardwoods, though badly burned at the base and likely to succumb to future fires, showed a high degree of recovery. Trees that, before the 1923 growing season, had badly discolored inner bark, nevertheless continued to grow. Some trees had dead inner bark but the outer bark remained uncracked and still adhered to the stem, while they retained their leaves up to the 1st of October of 1923. Early in winter the extent of the injury became much more noticeable through the cracking and breaking of the bark.



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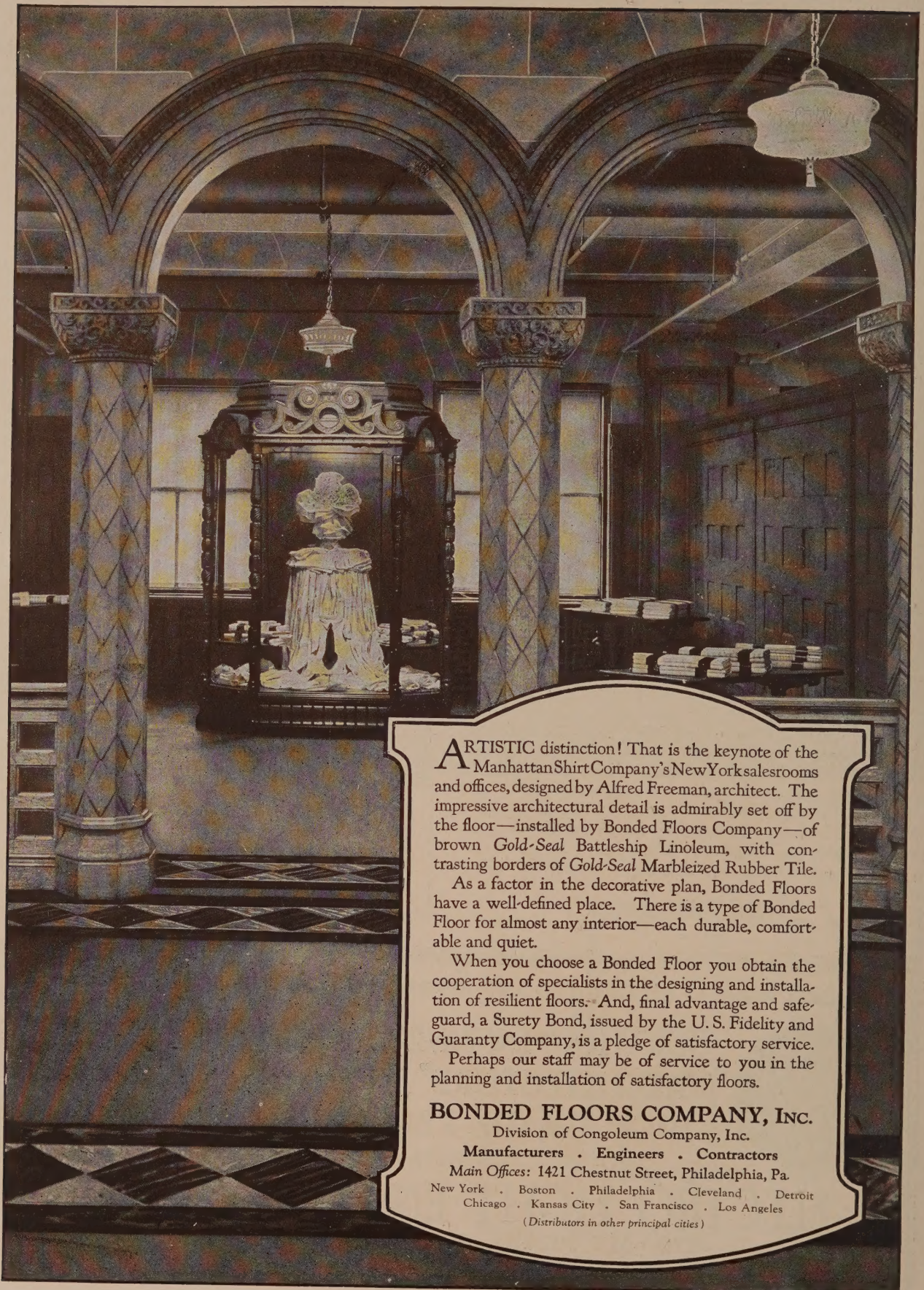
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Perhaps our staff may be of service to you in the planning and installation of satisfactory floors.

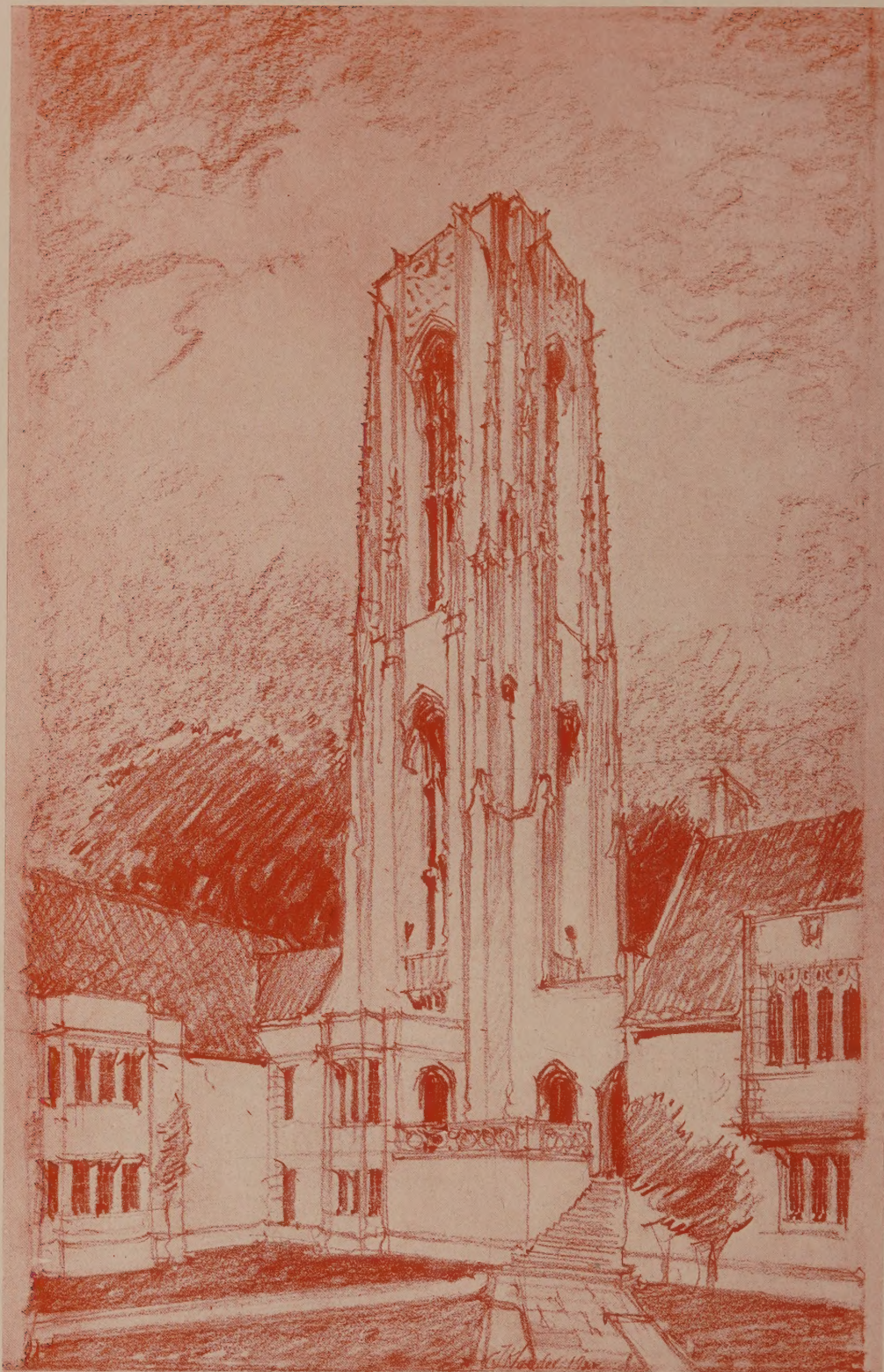
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